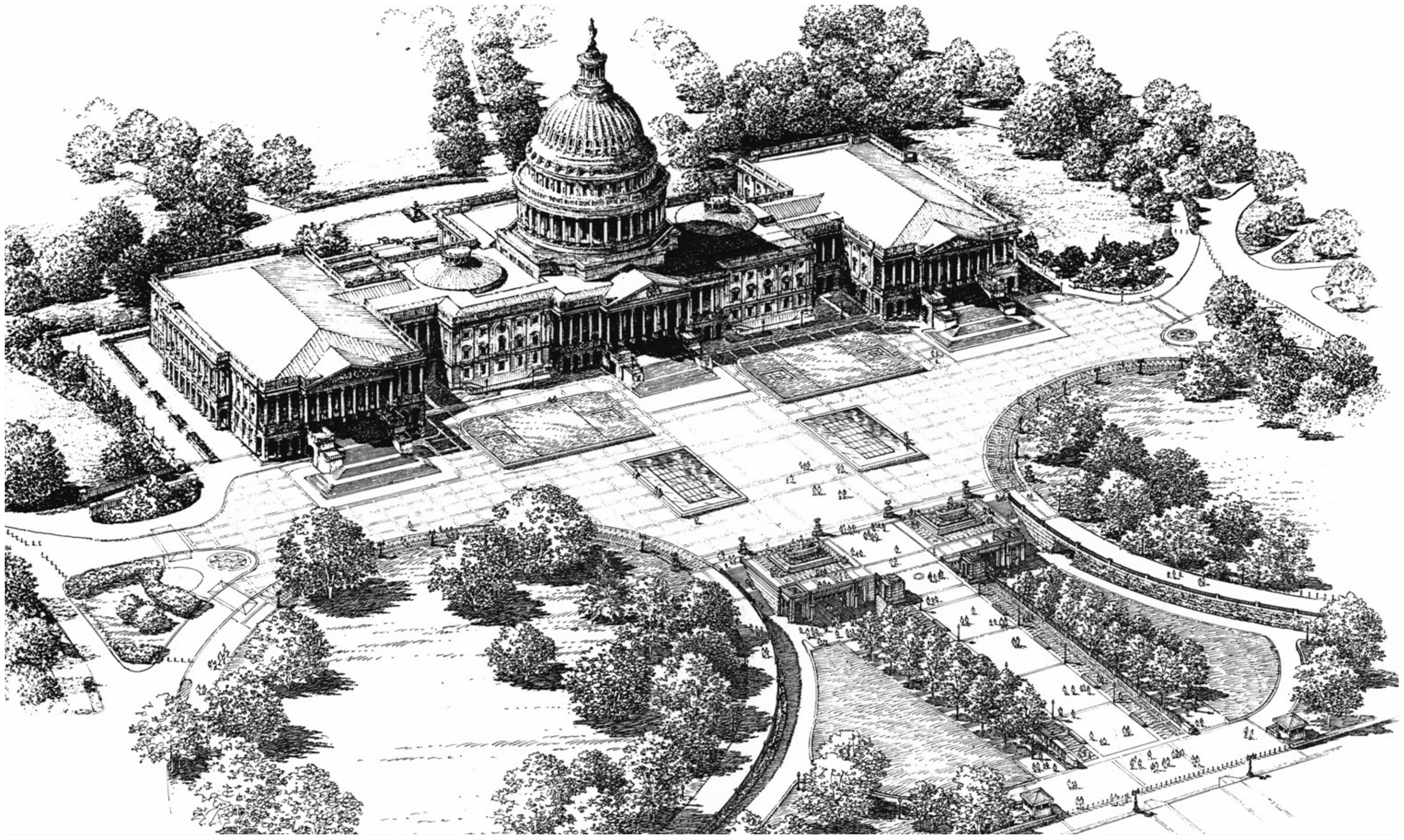
THE ARCHITECT OF THE CAPITOL
1793

CVC
CAPITOL
VISITOR
CENTER

U. S. Capitol Visitor Center

Overview of the Project:
Photo Summary and Contract Type



U. S. Capitol Visitor Center (CVC)

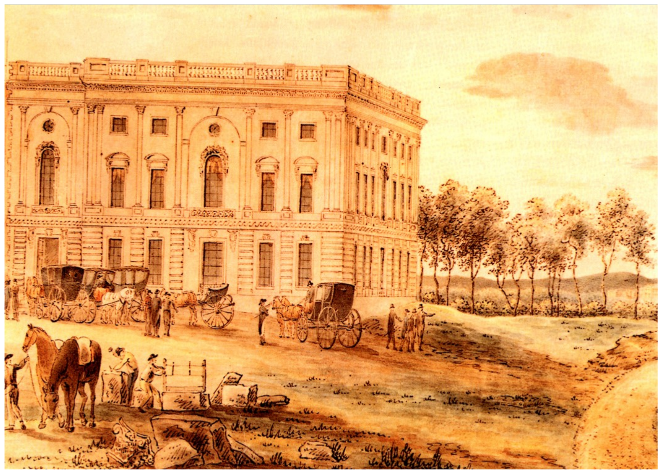
Washington, DC

CVC Project under the direction of Alan M. Hantman, FAIA
Architect of the Capitol

Presentation by Joseph J. Sacco, AIA
Former CVC Project Manager (2001-2004),
now with 3D/International, Inc. supporting the Pentagon Renovation & Construction Program (in a joint venture with DMJM)

THE ARCHITECT OF THE CAPITOL 1793
CVC CAPITOL VISITOR CENTER

U. S. Capitol
Construction History

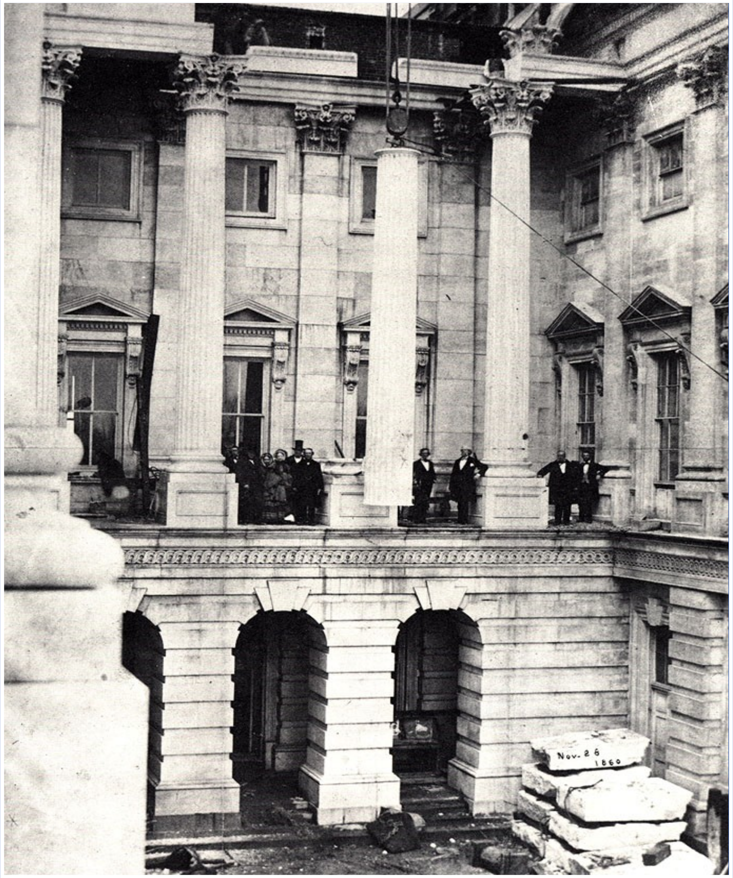


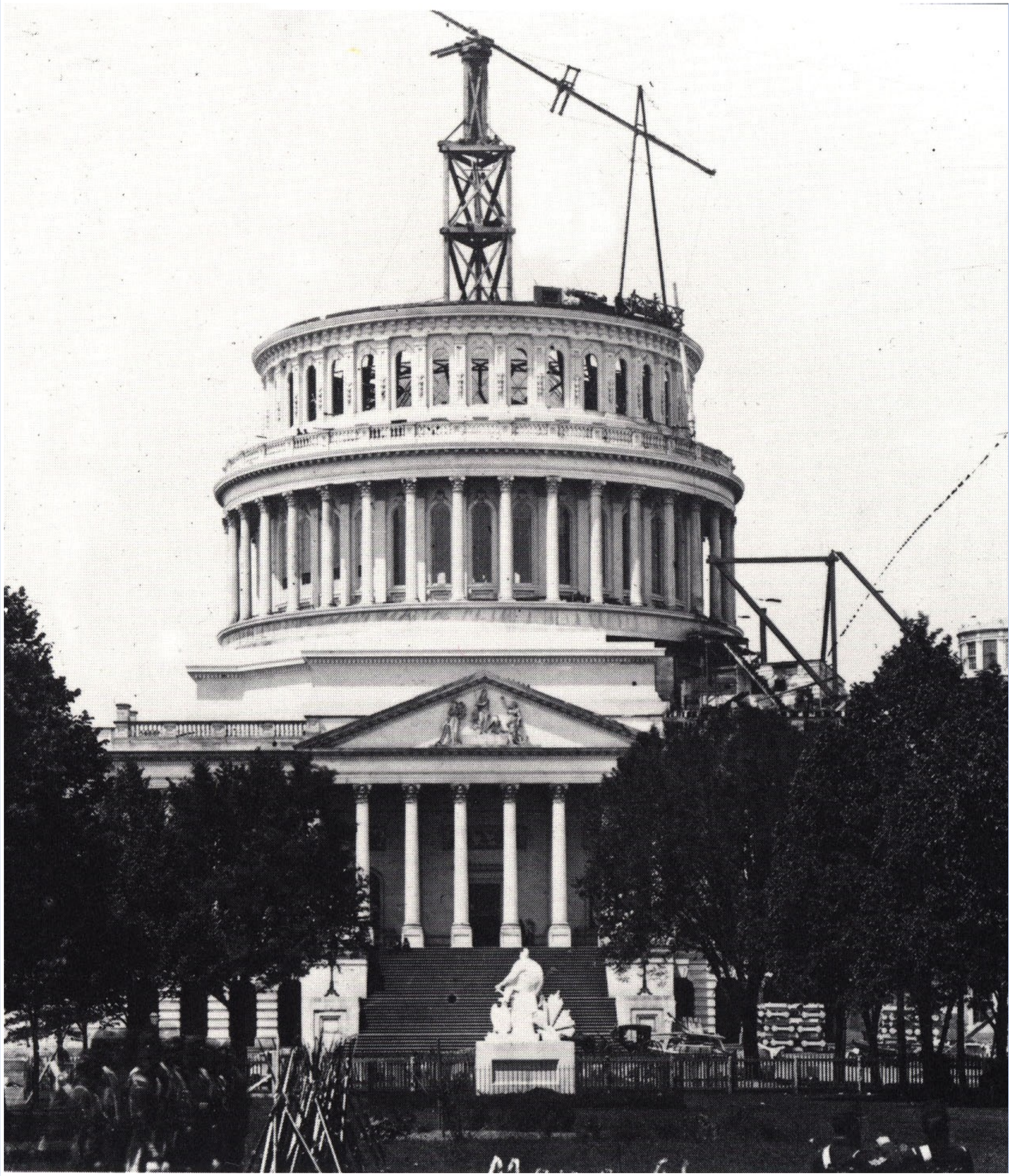
1793-1800	Original north wing complete
1793-1807	Original south wing complete
1814	*Capitol is burned down by British in War of 1812*
1818-1824	Capitol is rebuilt and center section with wood and copper dome completed
1851-1859	New House and Senate wings
1863	Cast iron dome completed
1884-1892	Terraces
1958-1962	East Front extension
1991-1993	Courtyard infill rooms
2002-2006	Capitol Visitor Center

THE ARCHITECT OF THE CAPITOL 1793

CVC CAPITOL VISITOR CENTER

U. S. Capitol
Construction History





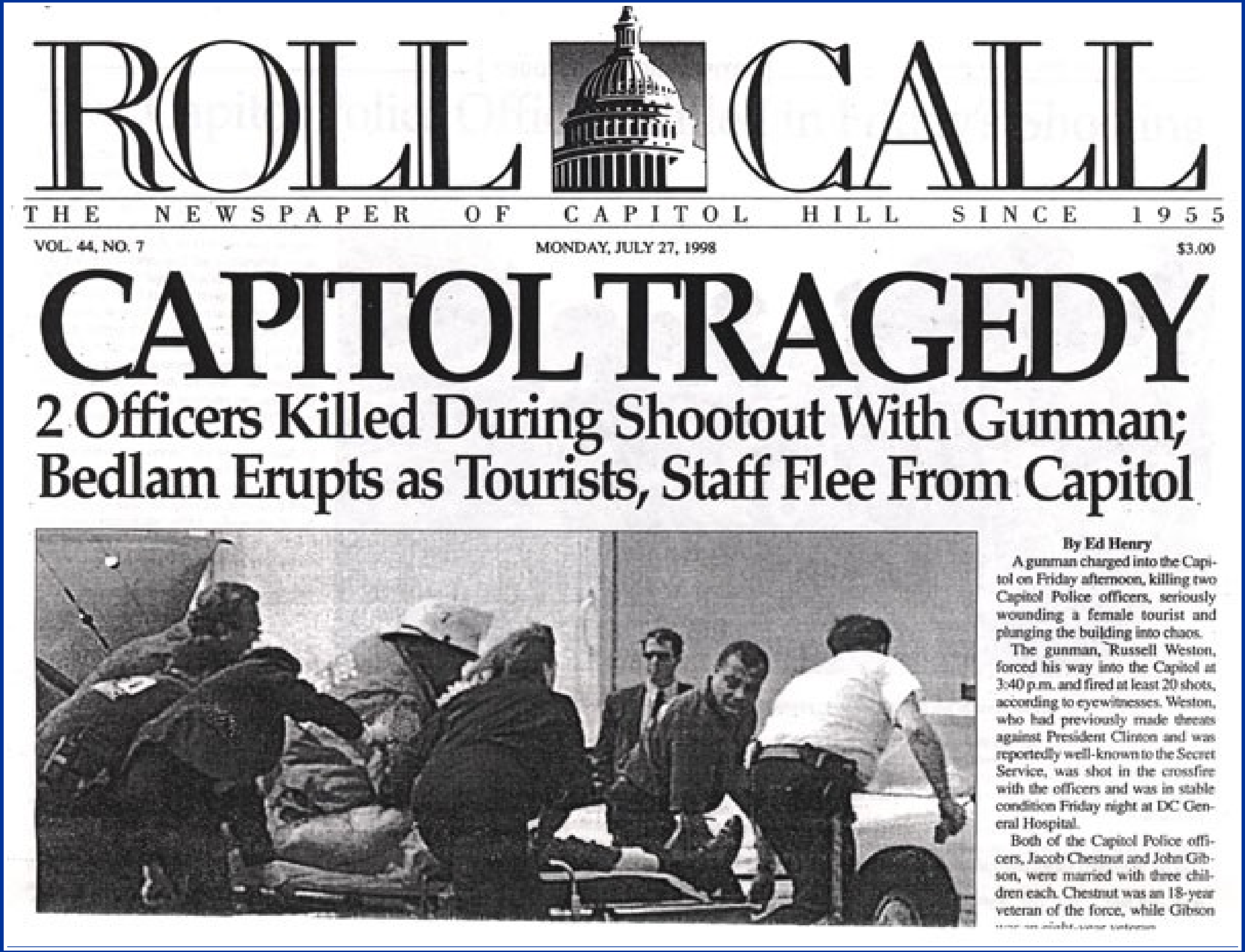
eed for A Capitol Visitor Center

Tourism Increases

1946 - 368,000
1961 - 675,000
1971 - 1 million
2000 - 3-4 million

Capitol Visitor Center - Project Goals

Security



ROLL CALL
THE NEWSPAPER OF CAPITOL HILL SINCE 1955
VOL. 44, NO. 7
MONDAY, JULY 27, 1998
$3.00

CAPITOL TRAGEDY

2 Officers Killed During Shootout With Gunman; Bedlam Erupts as Tourists, Staff Flee From Capitol

By Ed Henry

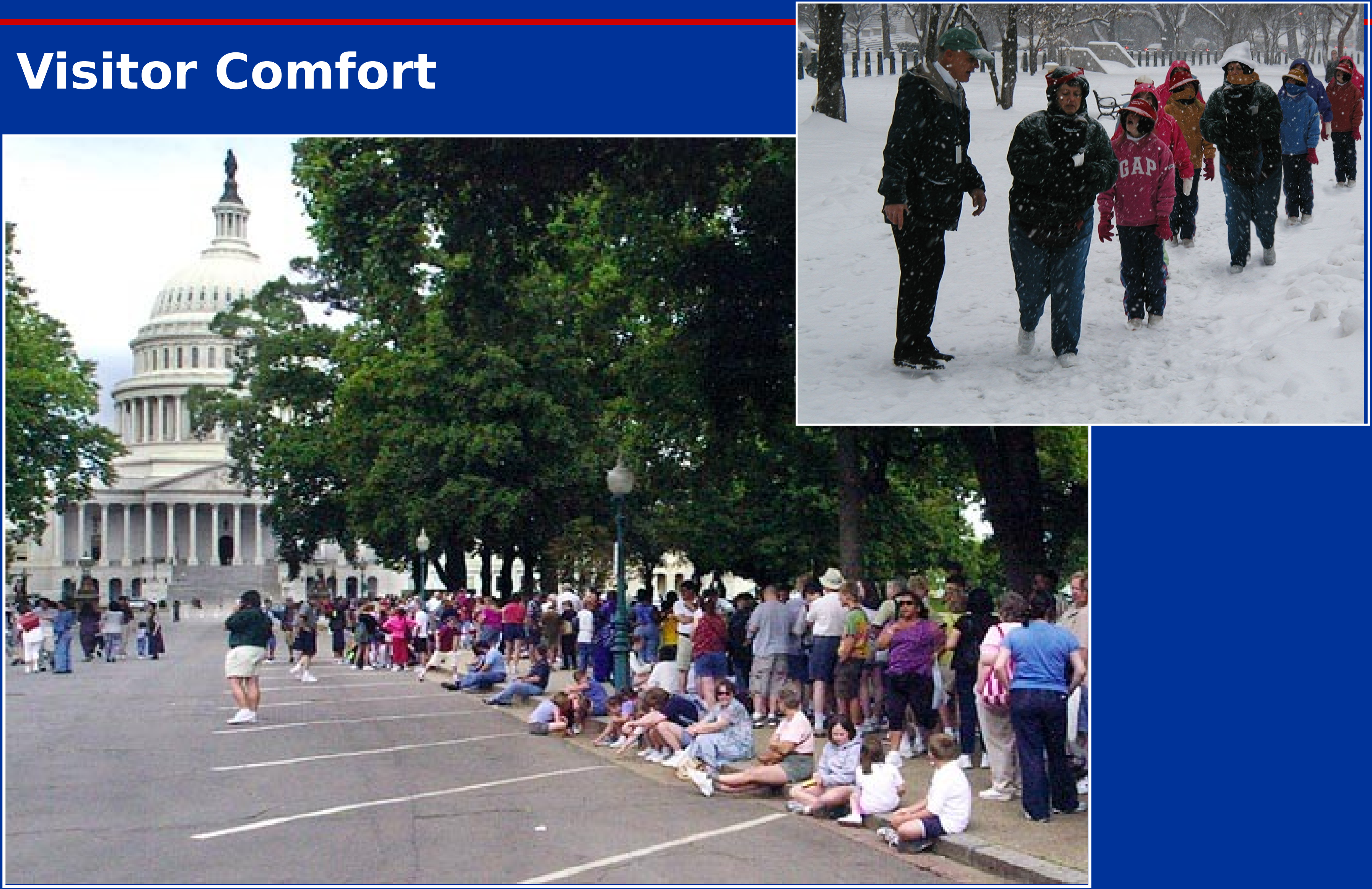
A gunman charged into the Capitol on Friday afternoon, killing two Capitol Police officers, seriously wounding a female tourist and plunging the building into chaos.

The gunman, Russell Weston, forced his way into the Capitol at 3:40 p.m. and fired at least 20 shots, according to eyewitnesses. Weston, who had previously made threats against President Clinton and was reportedly well-known to the Secret Service, was shot in the crossfire with the officers and was in stable condition Friday night at DC General Hospital.

Both of the Capitol Police officers, Jacob Chestnut and John Gibson, were married with three children each. Chestnut was an 18-year veteran of the force, while Gibson was an eight-year veteran

Capitol Visitor Center - Project Goals

Visitor Comfort



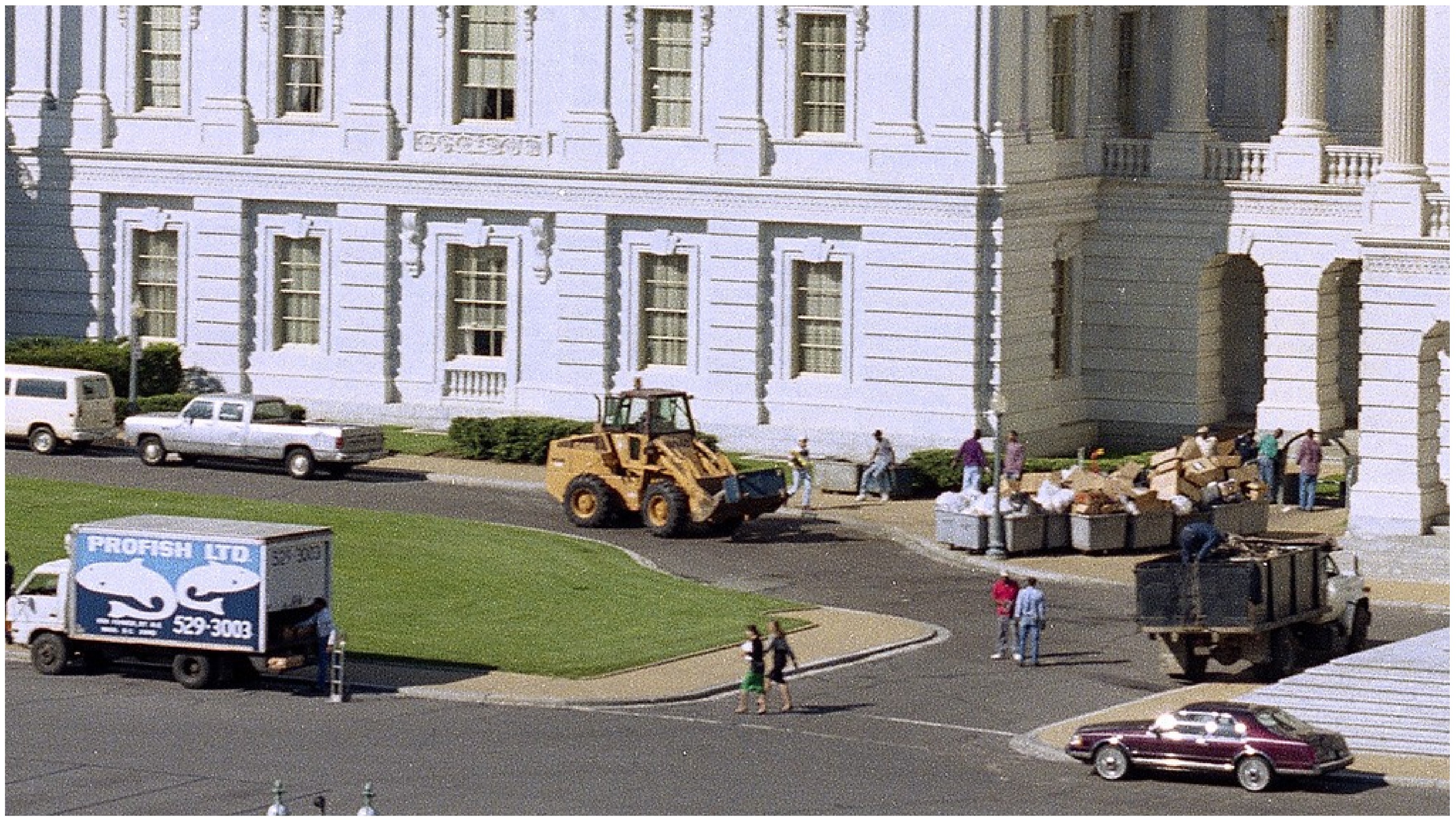
Capitol Visitor Center - Project Goals

Visitor Educatio

E PLURIBUS UNUM
OUT OF MANY, ONE
ONE CONGRESS, TWO INSTITUTIONS
THE HOUSE
THE SENATE

Capitol Visitor Center - Project Goals

Functional Improvements


PROFISH LTD
529-3003

Capitol Visitor Center - Leadership Su

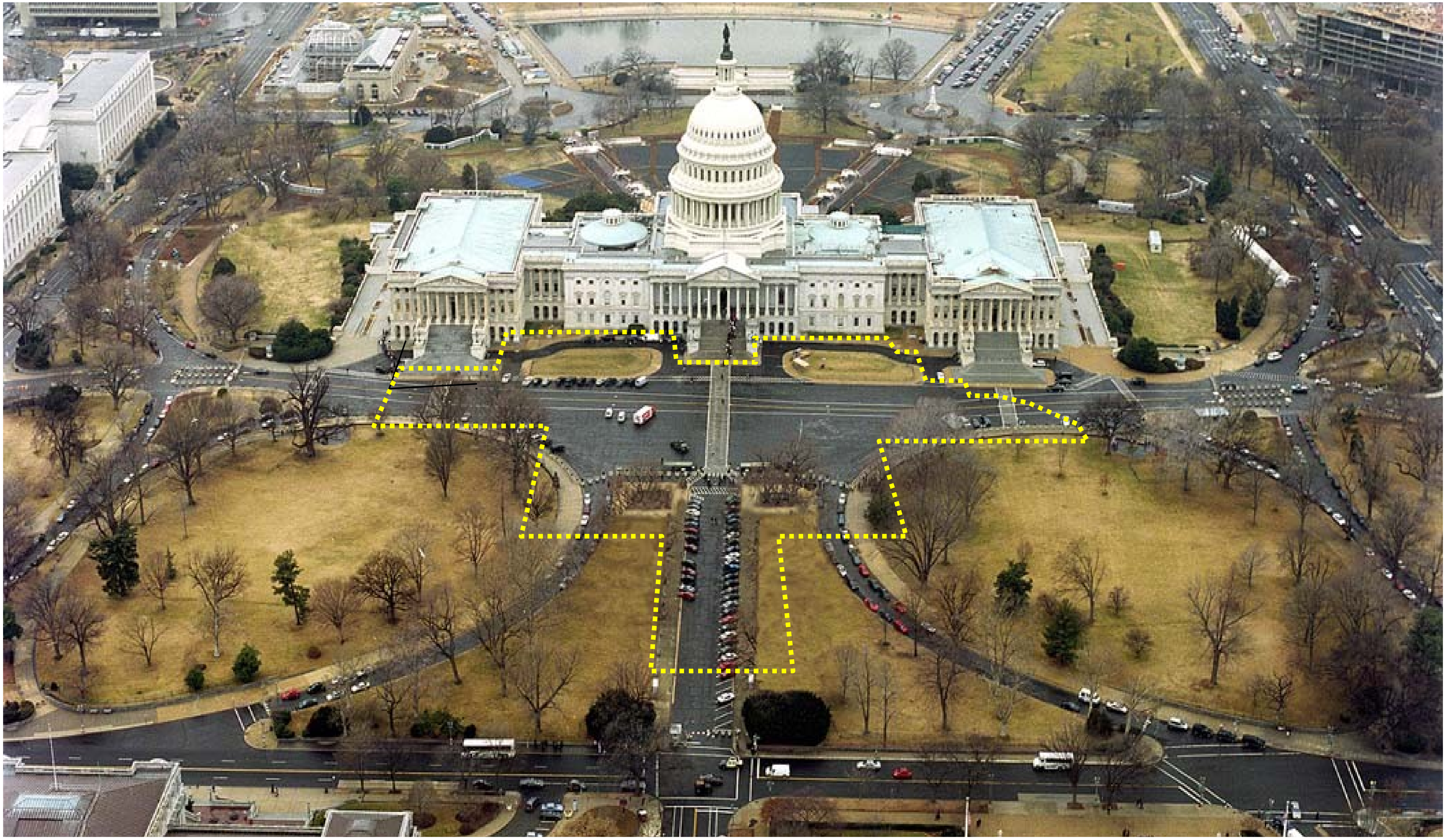
Capitol Visitor Center - Leadership Re

- Capitol Preservation Commission (CPC)=the Client (primarily the Majority/Minority leaders of Congress and their staff)
- Appropriations Committees
- General Accounting Office (GAO)-on site
- Appropriations Investigations and Survey team-on site
- Hearings-annual

Capitol Visitor Center

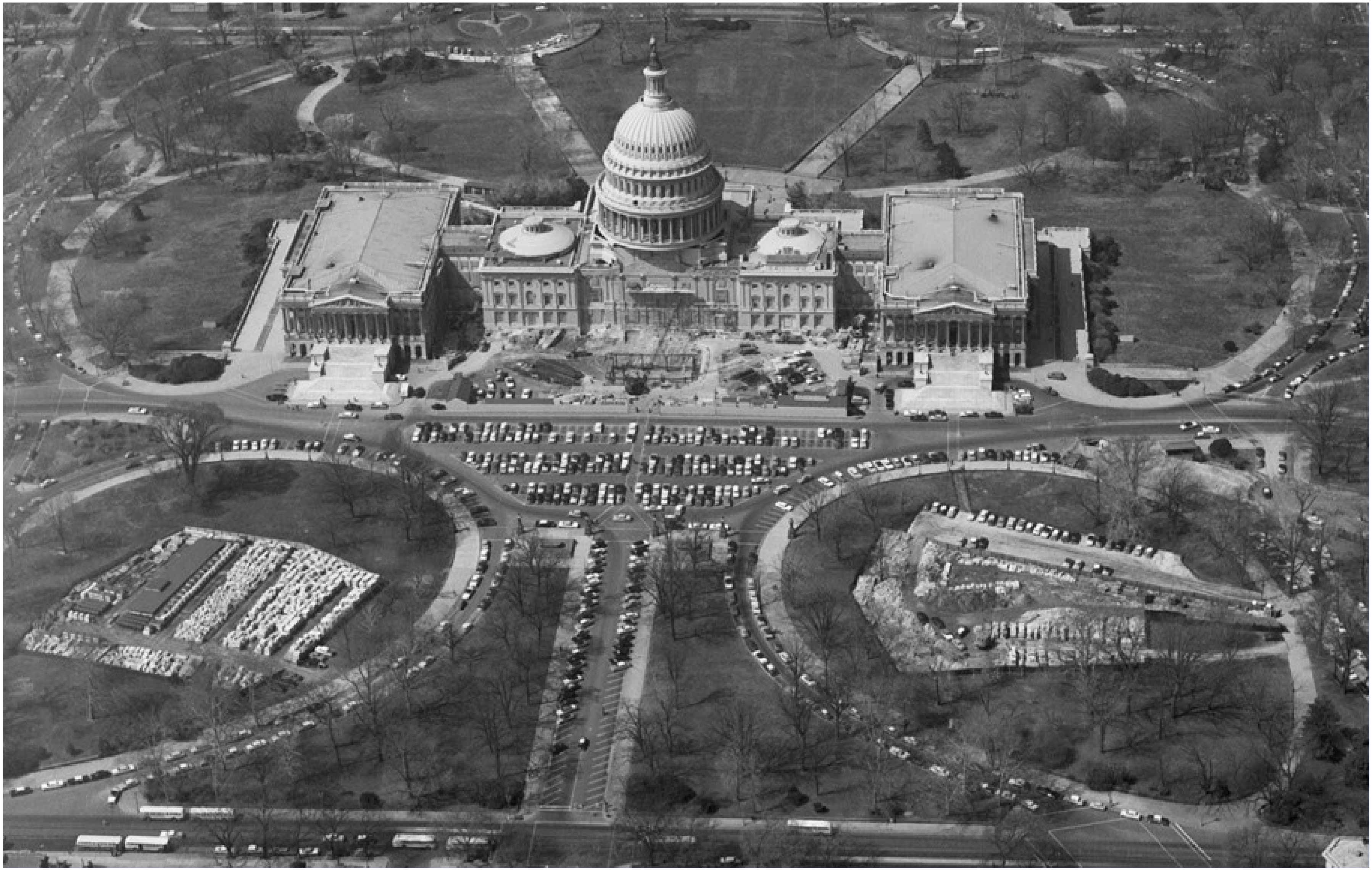
Before Constr

Plaza marked by asphalt parking a



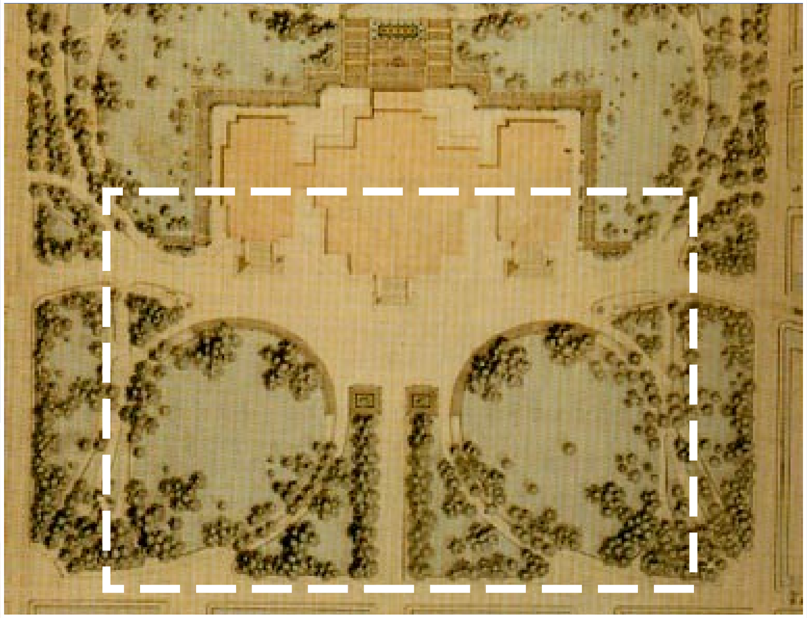
Capitol Visitor Center

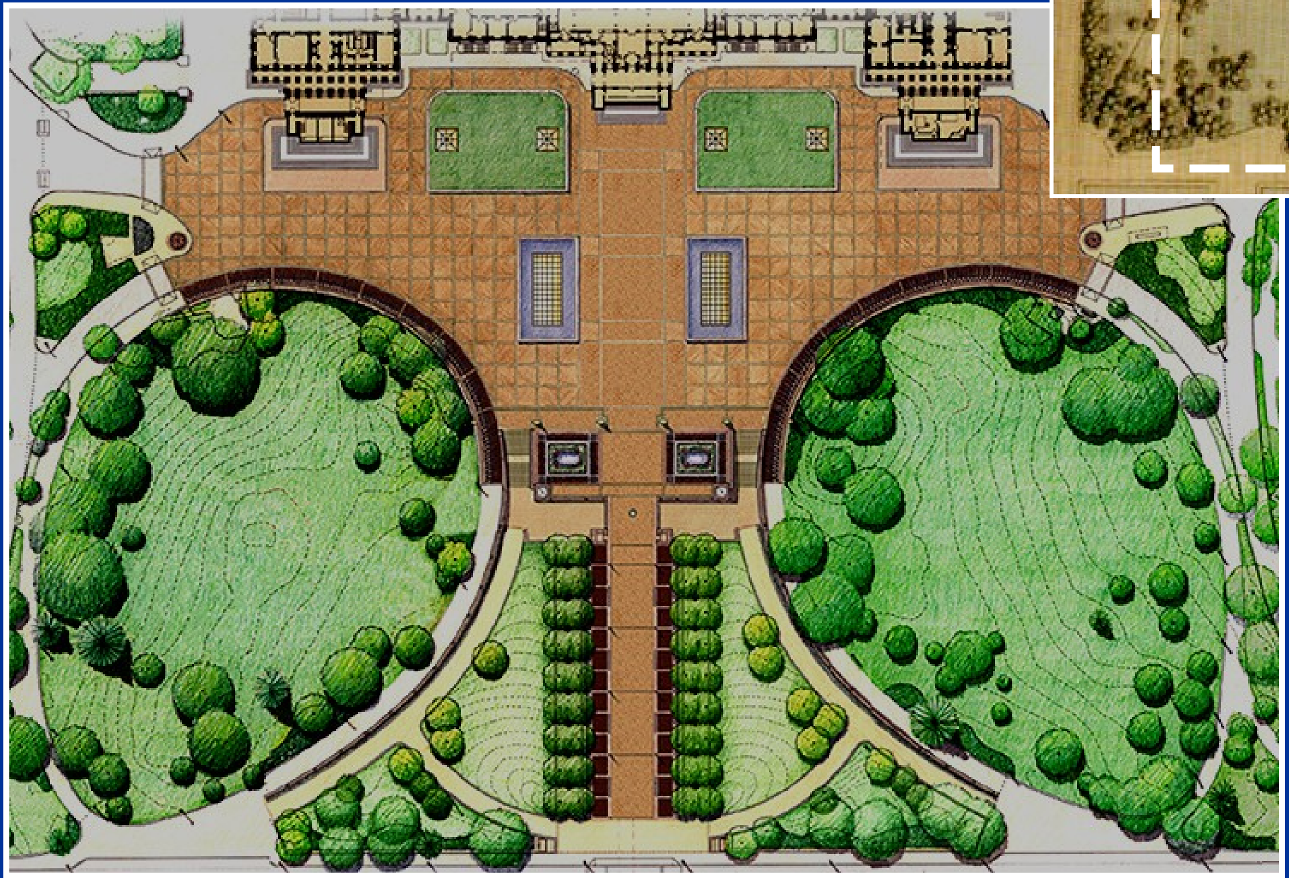
East Front
1958



Capitol Visitor Center

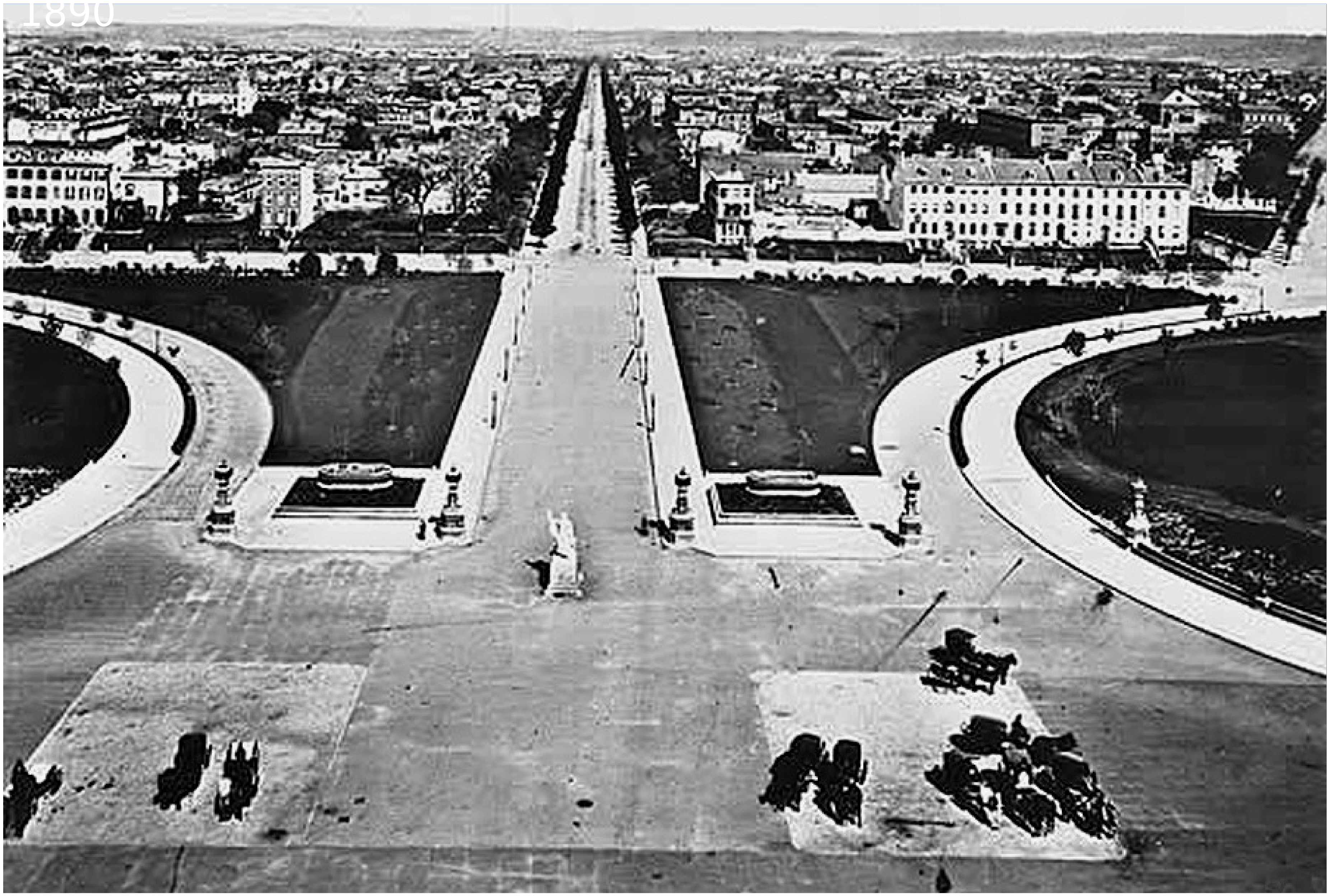
- Revitalizing Historic Landscape





The landscape design for the Capitol Visitor Center (left) revitalizes the park-like setting and grand views of the Capitol intended by Frederick Law Olmsted in his original 1874 design (above) for the East Capitol Grounds.

Historic Frederick Law Olmsted Landscape, 1890



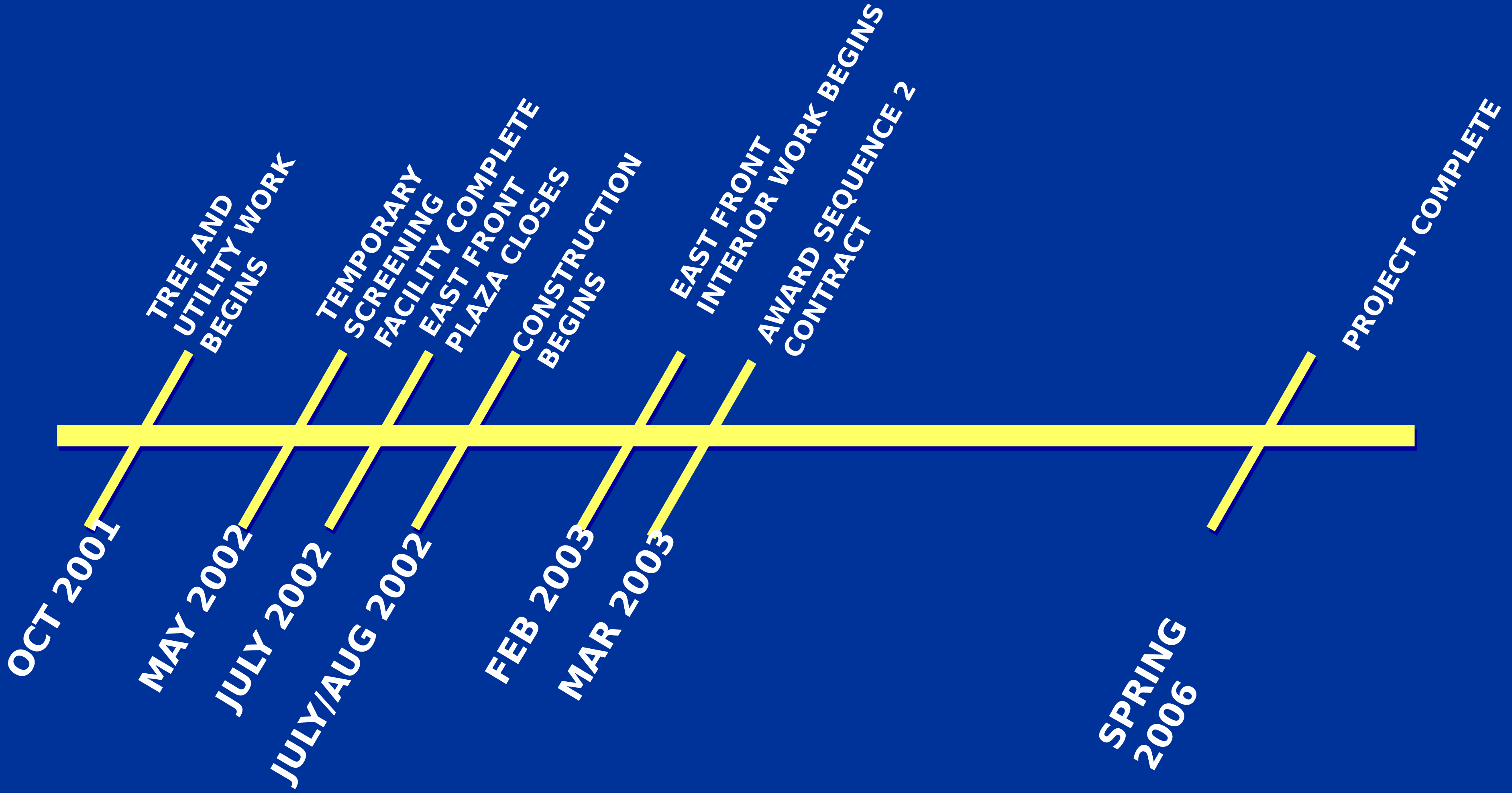
U. S. Capitol Visitor Center

Contract Type

- Design-Bid-Build
- Best Value Source Selection
- Firm Fixed Fee contract with an Award Fee plan
- Funding was sequenced, thus so was construction:
    - Tree Preservation
    - Utility relocation
    - Visitor accommodations
    - Sequence 1
    - Sequence 2
    - Expansion space build-out

Capitol Visitor Center

CONSTRUCTION SCHEDULE



OCT 2001 – TREE AND UTILITY WORK BEGINS

MAY 2002 – TEMPORARY SCREENING FACILITY COMPLETE

JULY 2002 – EAST FRONT PLAZA CLOSES

JULY/AUG 2002 – CONSTRUCTION BEGINS

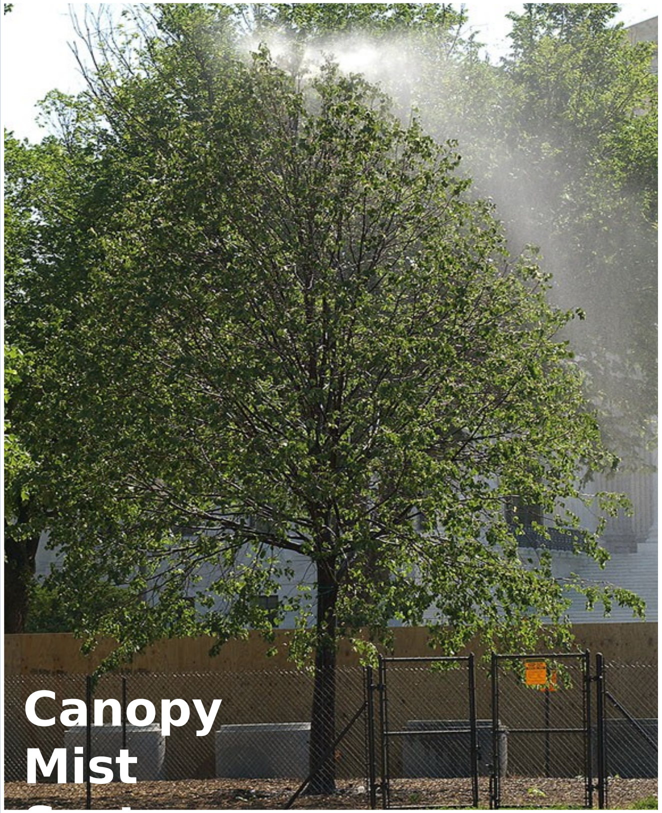
FEB 2003 – EAST FRONT INTERIOR WORK BEGINS

MAR 2003 – AWARD SEQUENCE 2 CONTRACT

SPRING 2006 – PROJECT COMPLETE

Tree Preservation

Pruning

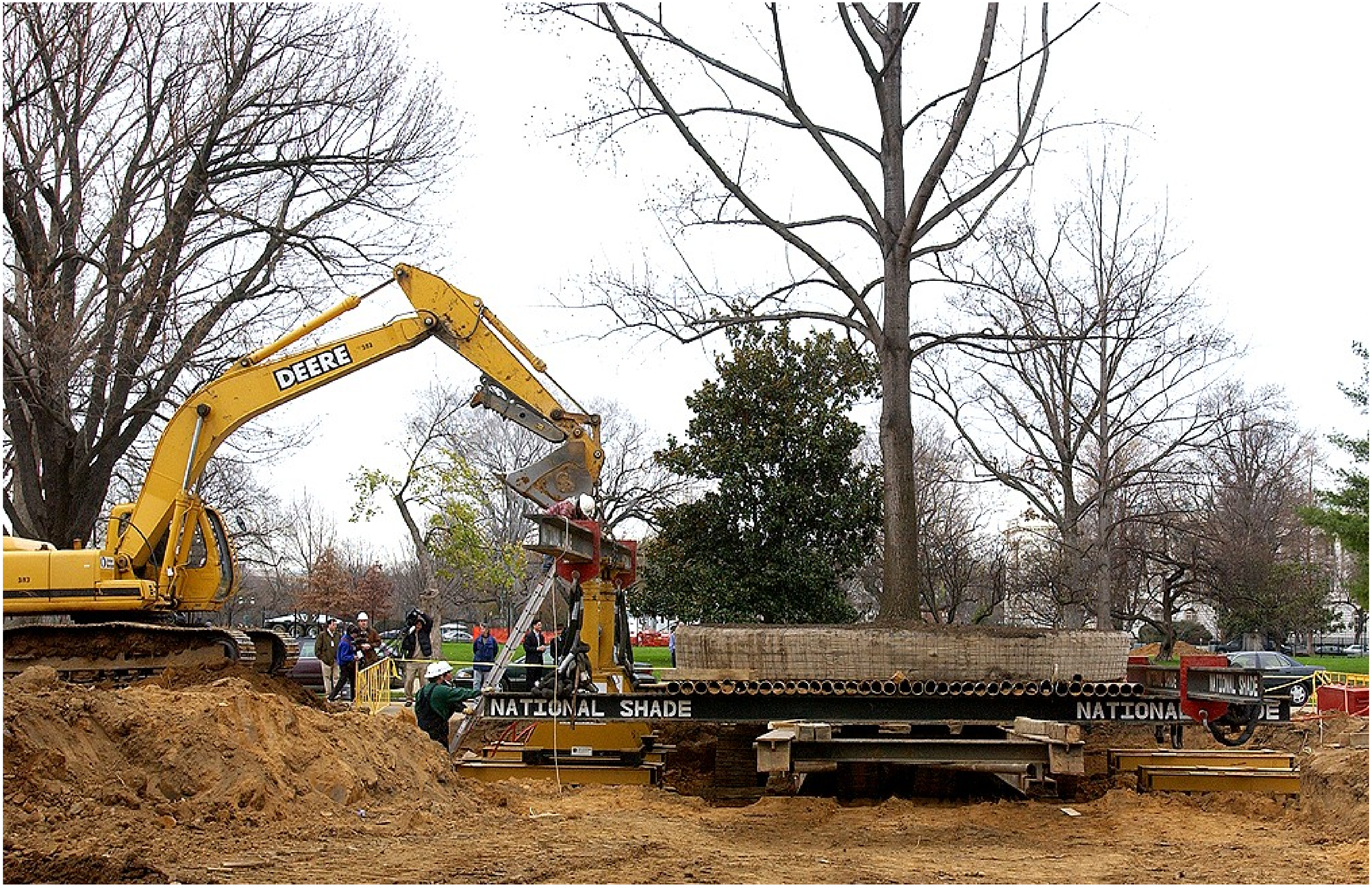


Canopy Mist System

Protective Fencing

Tree Preservation

Transplanting


DEERE
NATIONAL SHADE
NATIONAL SHADE

Capitol Visitor Center

Utility Work

Historic Preservation Work

Capitol Visitor Center

Historic Preservation Work

Capitol Visitor Center

Parking Accommodations for Members

Capitol Visitor Center

Noise Reduction

- Noise Reduction Window Units Installed on East Front

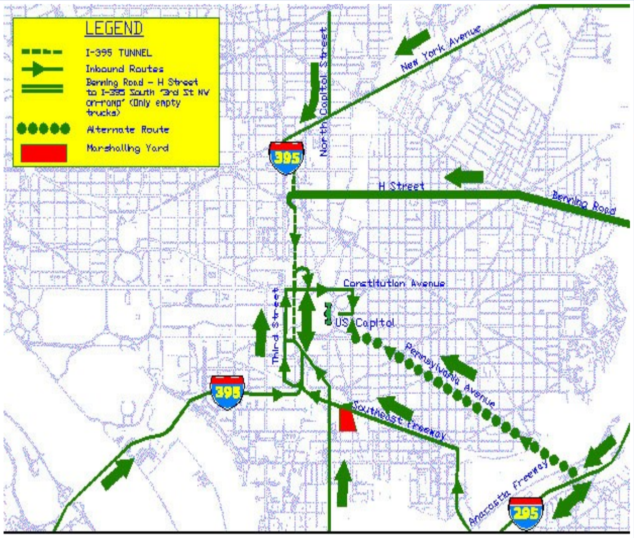
Capitol Visitor Center

Visitor Screening Facilities

Capitol Visitor Center

Community Outreach

EXIT
LOEWS
L'ENFANT PLAZA HOTEL


LEGEND
I-395 TUNNEL
Inbound Routes
Benning Road – H Street to I-395 South '3rd St NW on-ramp' (Only empty trucks)
Alternate Route
Marshalling Yard
North Capitol Street
New York Avenue
395
H Street
Benning Road
Constitution Avenue
US Capitol
Third Street
Pennsylvania Avenue
395
Southeast Freeway
Anacostia Freeway
295

Capitol Visitor Center
Project Footprint & Construction Perimeter

SEPTEMBER 11, 2001

SEPTEMBER 11, 2001

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

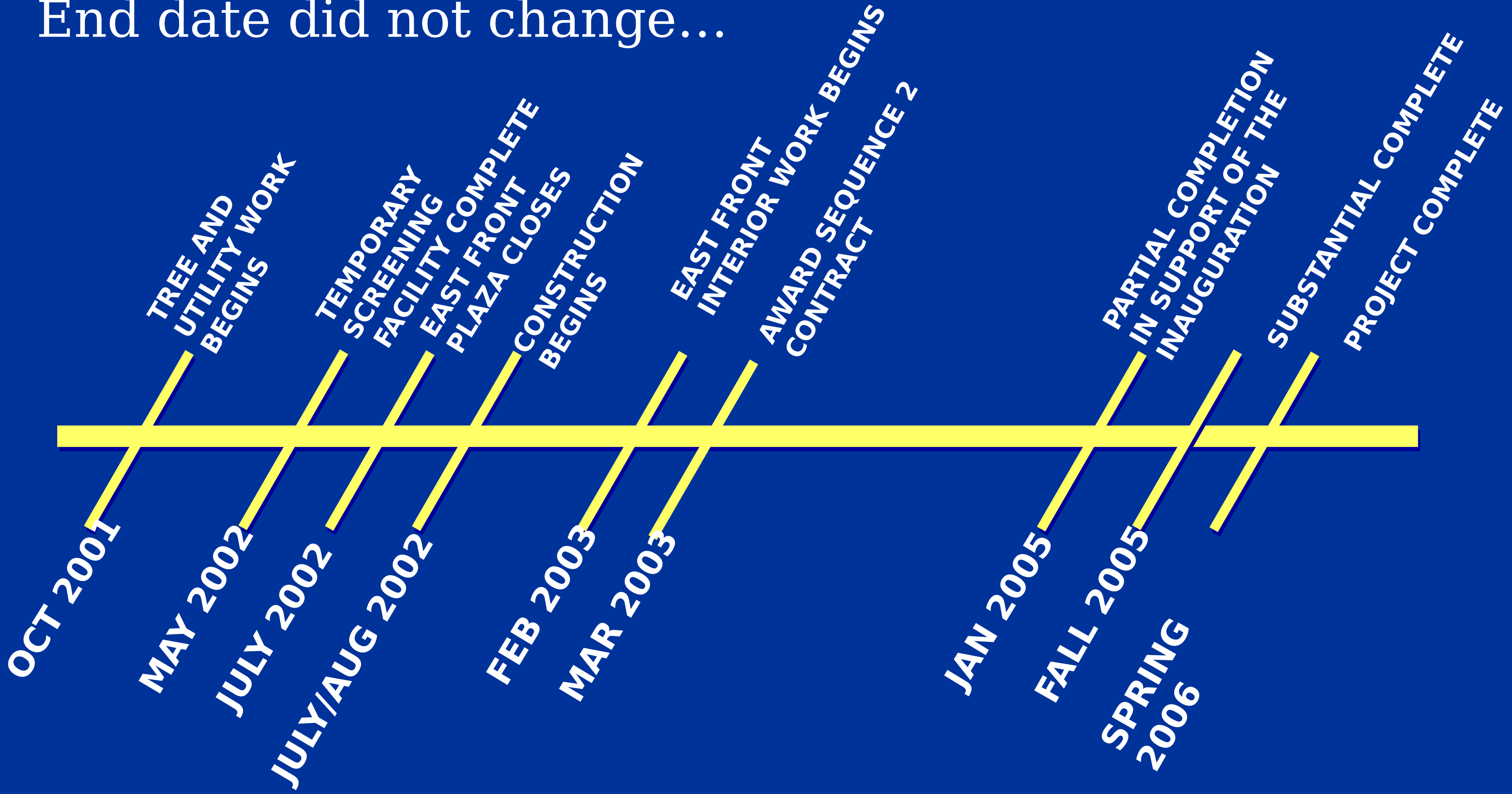
U. S. Capitol Visitor Center

- Security review
- Defense Threat Reduction Agency review
  - Blast protection
  - Structure
  - Set back/stand off distance
  - Air Intakes
- Re-Design Required-end date does NOT change
- Revised Acquisition Strategy: Sequence 1 and 2, results in separate procurement and source selections.
- While Sequence 1 is underway, Sequence 2 design is revised (you can imagine the complications from this plan).

Capitol Visitor Center

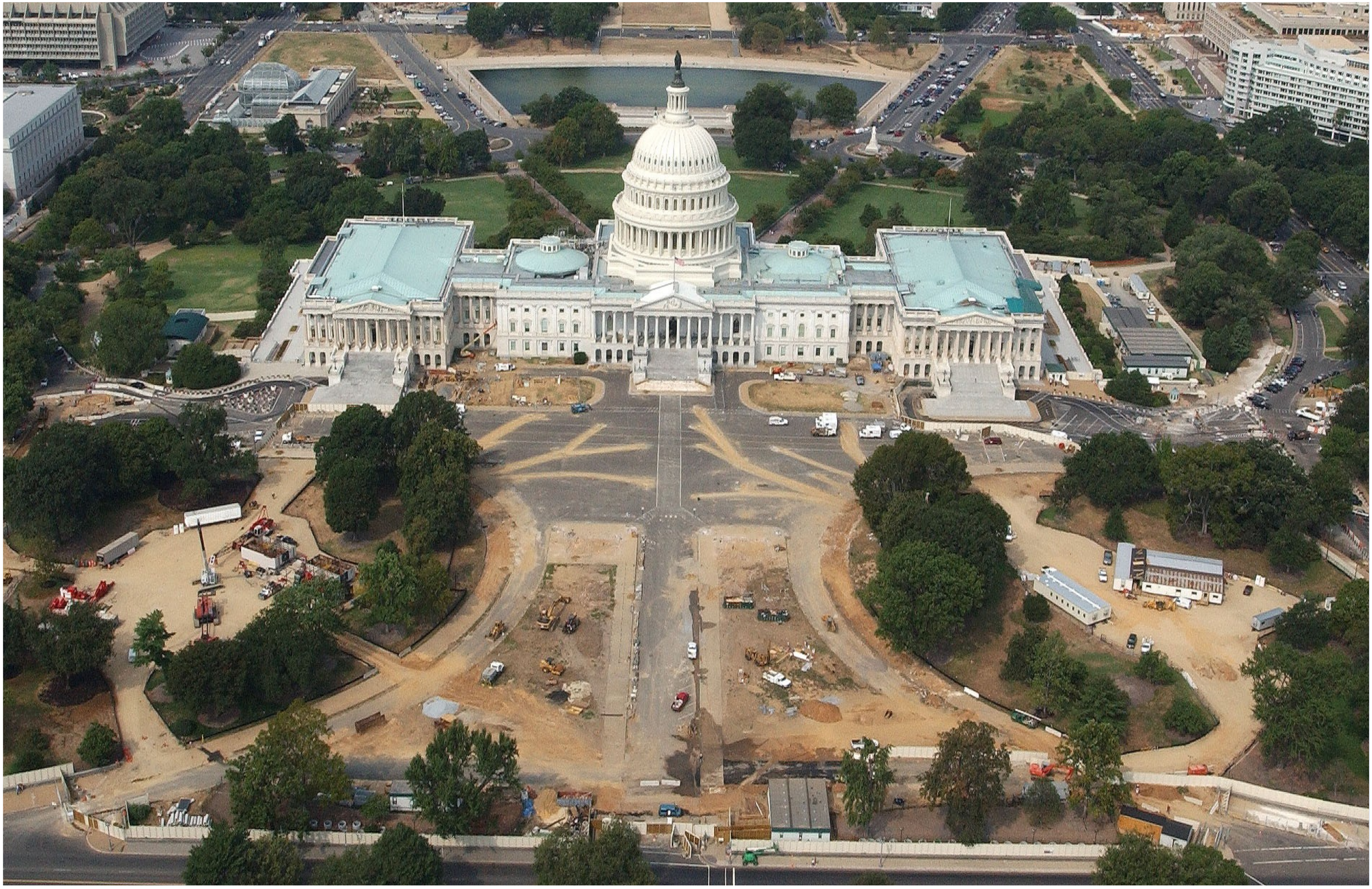
CONSTRUCTION SCHEDULE

End date did not change…

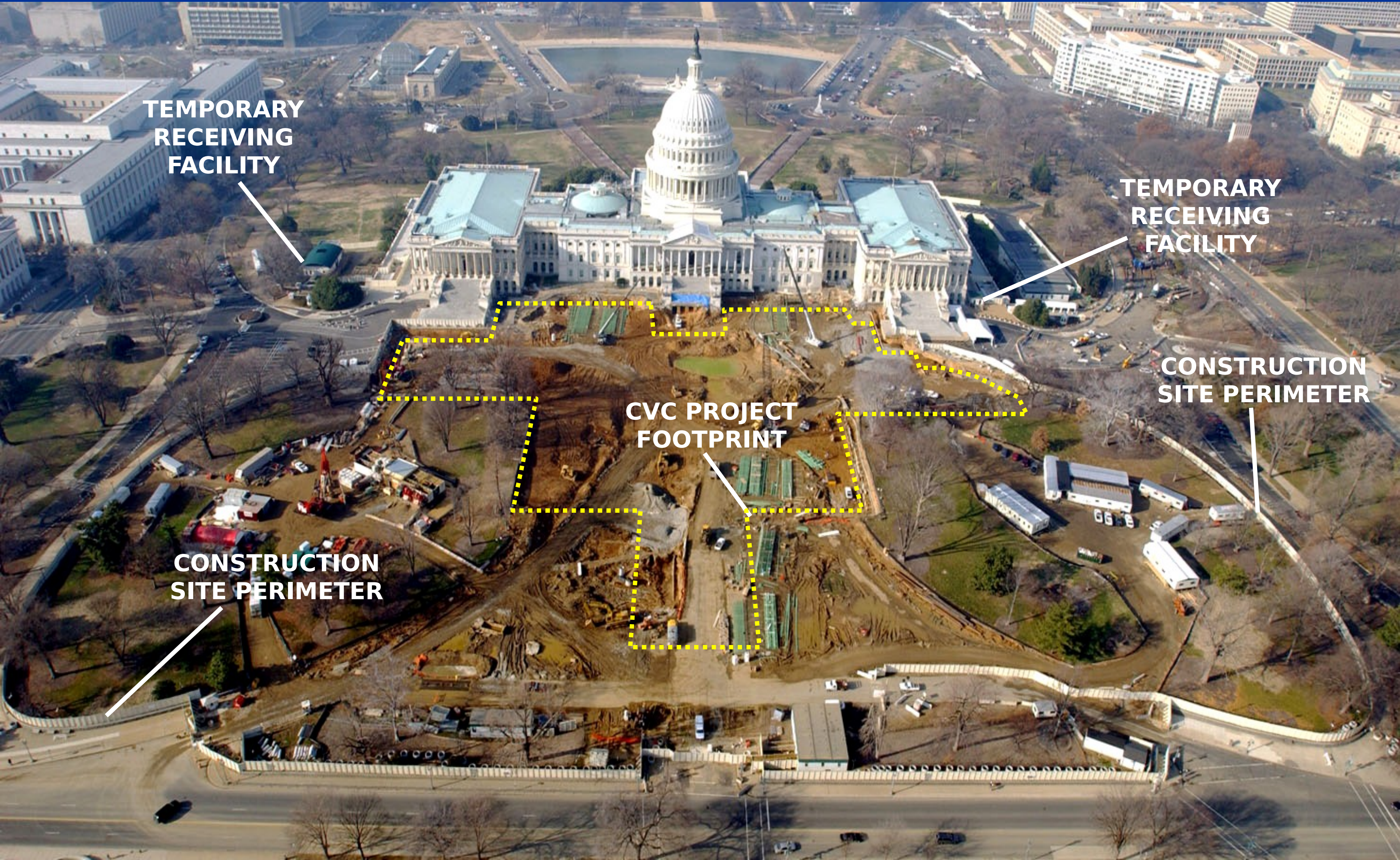


OCT 2001	TREE AND UTILITY WORK BEGINS
MAY 2002	TEMPORARY SCREENING FACILITY COMPLETE
JULY 2002	EAST FRONT PLAZA CLOSES
JULY/AUG 2002	CONSTRUCTION BEGINS
FEB 2003	EAST FRONT INTERIOR WORK BEGINS
MAR 2003	AWARD SEQUENCE 2 CONTRACT
JAN 2005	PARTIAL COMPLETION IN SUPPORT OF THE INAUGURATION
FALL 2005	SUBSTANTIAL COMPLETE
SPRING 2006	PROJECT COMPLETE

Main Construction Begins - Aug



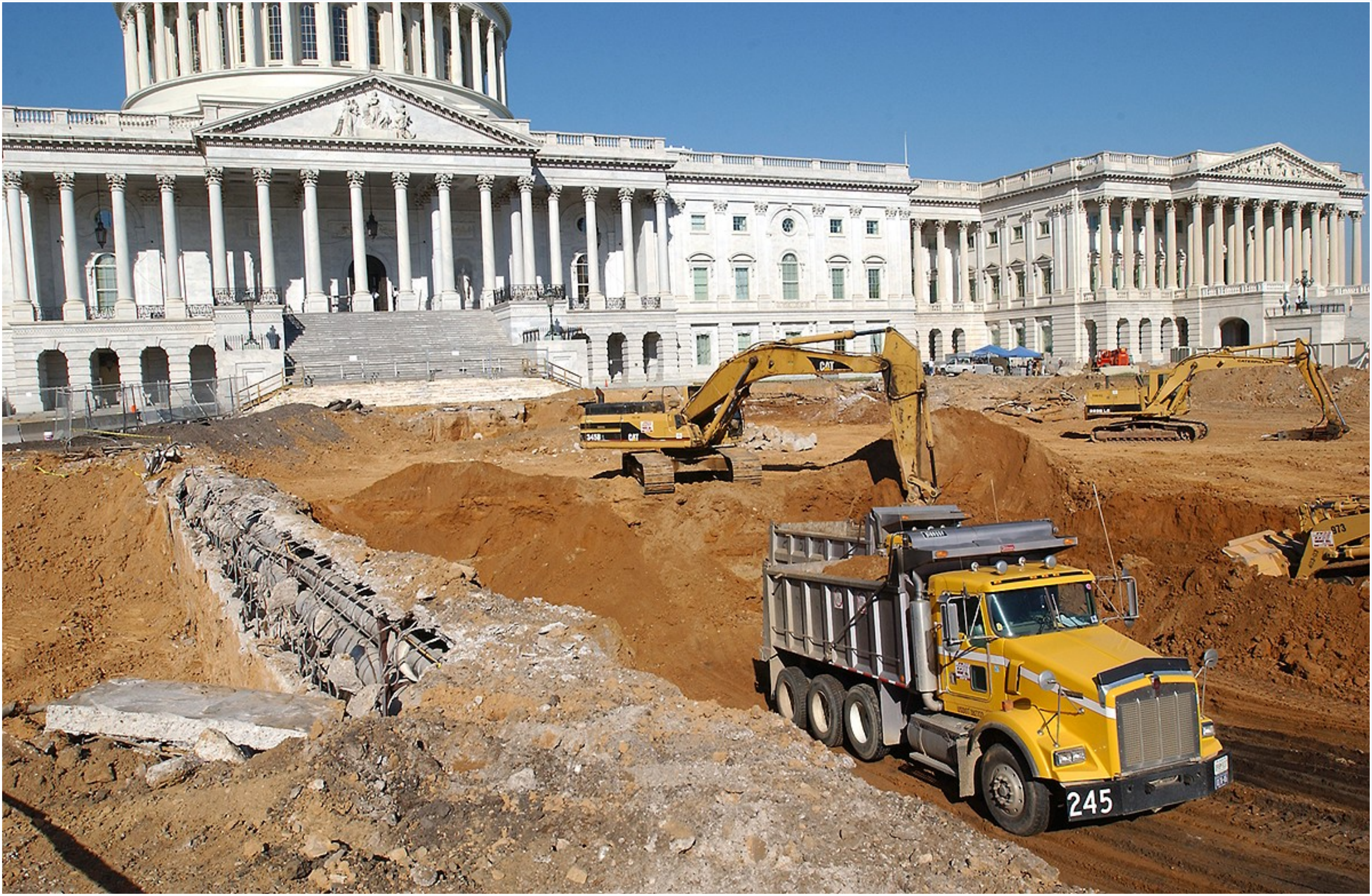
Project Footprint and Construction Perimeter


TEMPORARY RECEIVING FACILITY
TEMPORARY RECEIVING FACILITY
CONSTRUCTION SITE PERIMETER
CVC PROJECT FOOTPRINT
CONSTRUCTION SITE PERIMETER

Capitol Visitor Center

Site Excavation

Excavation ongoing - 60,000 truck loads to be removed


CAT
345B L
CAT
973
245

Capitol Visitor Center

Site Excavation

- 5-acre footprint
- 50 feet deep
- 3,000 tons of material excavated each day
- 600,000 cubic yards to be removed

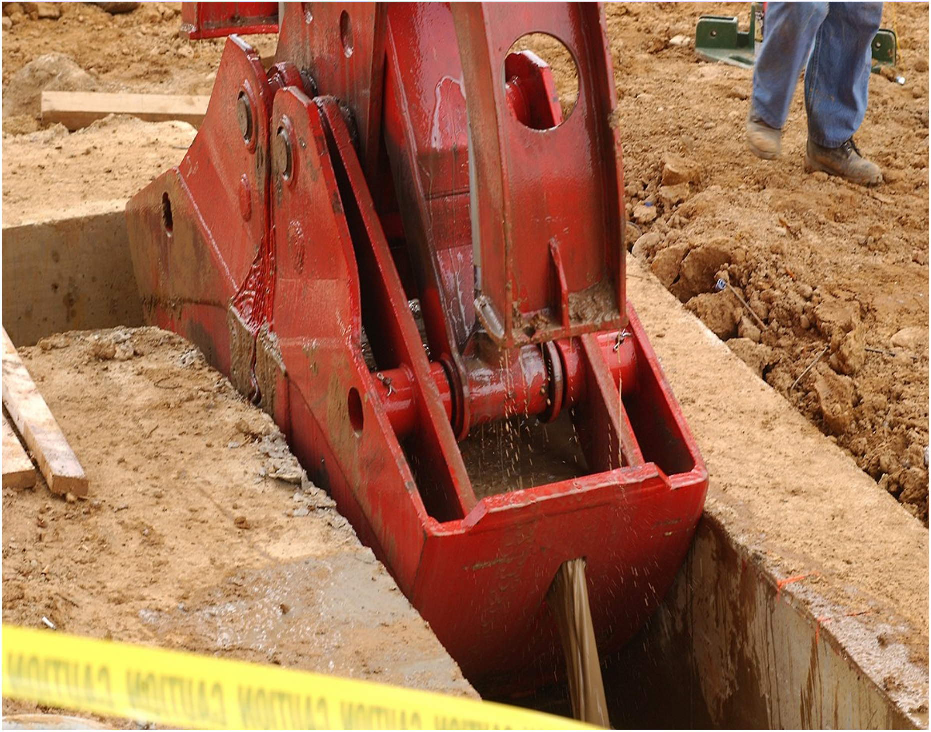
Capitol Visitor Center

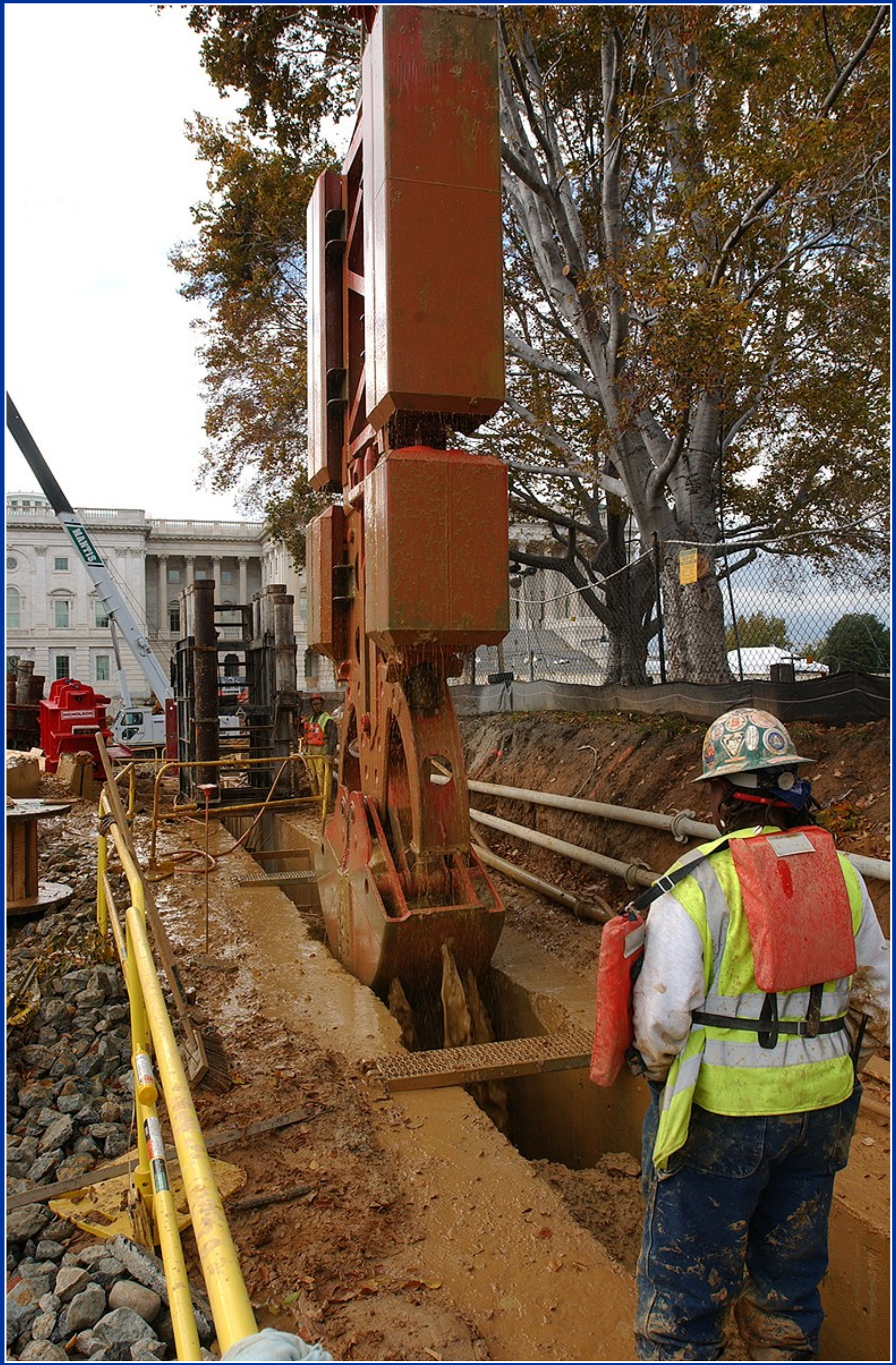
Construction of Foundation Walls - Guide Walls

ICE CONTRACTORS
Environmental Solutions
WARNING

Capitol Visitor Center

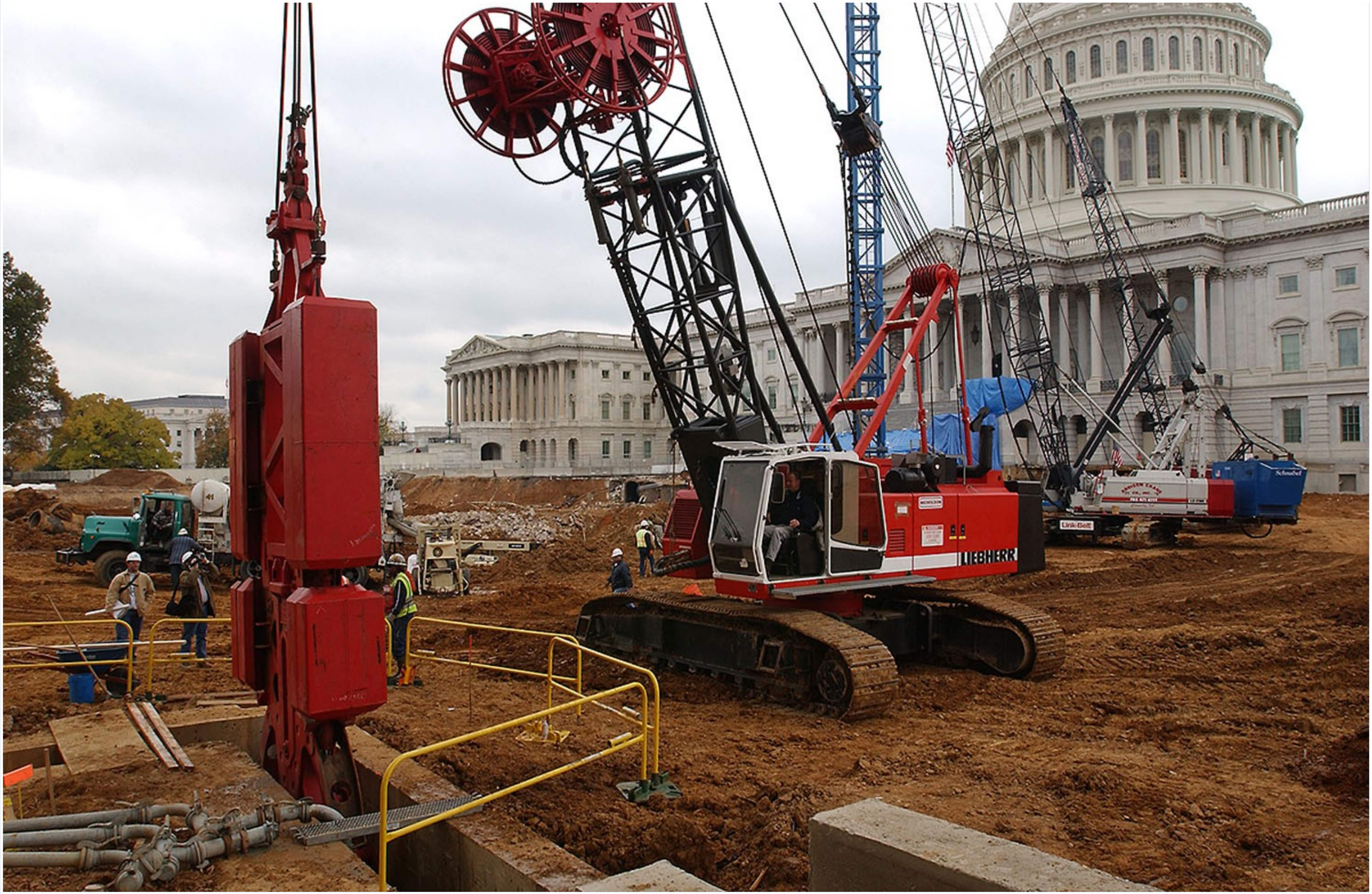
Excavation of Foundation Wall Trenches





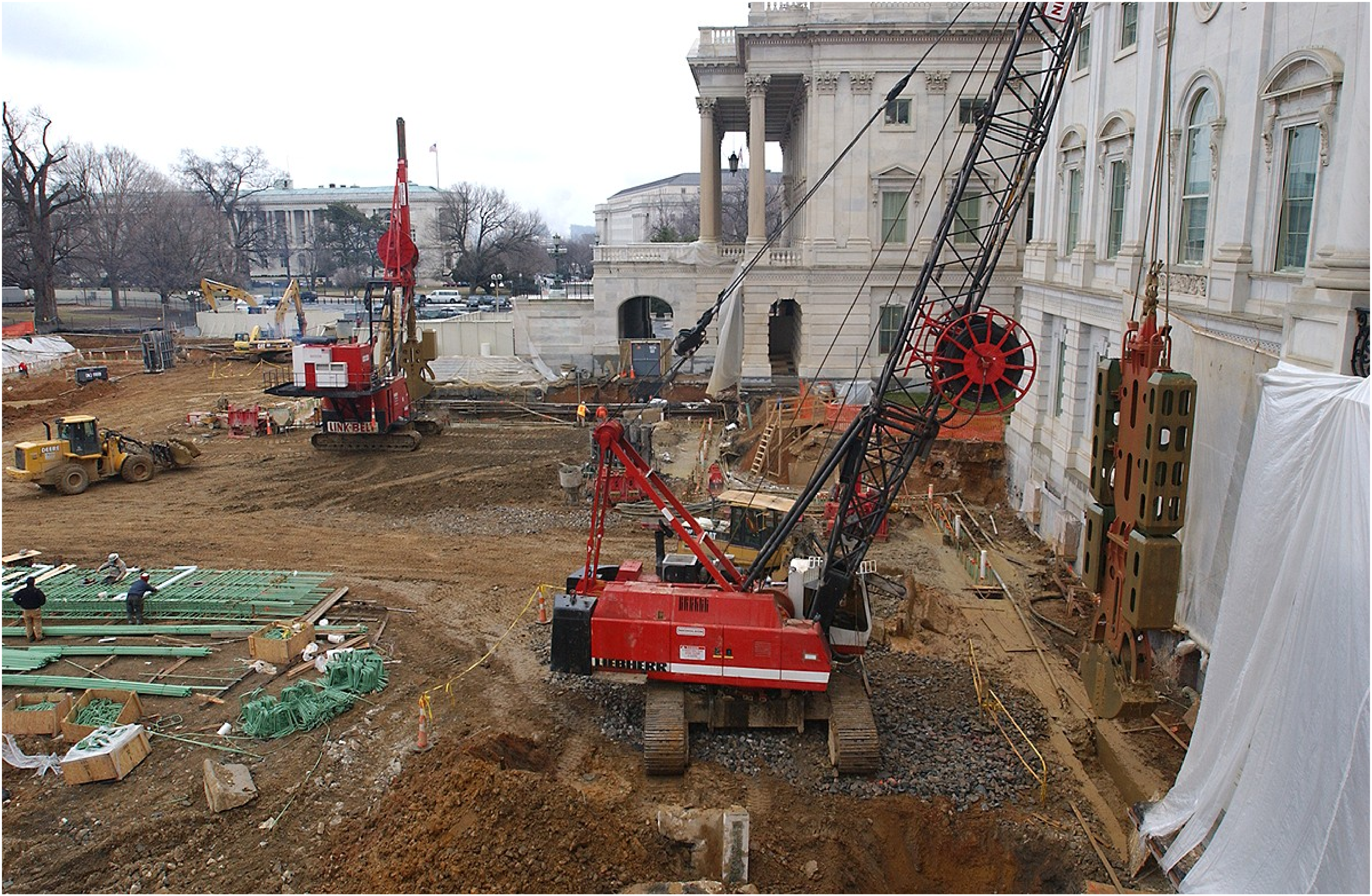
Capitol Visitor Center

Construction of Foundation Walls - Excavation


LIEBHERR
Link-Belt
Schnabel

Capitol Visitor Center

Construction of Foundation Walls - Excavation


LINK-BELT
LIEBHERR

Capitol Visitor Center

International Attention

CRANES TODAY

The independent magazine of the crane industry

November 2003

USA

Capitol construction

Florida's Champion

Distribution in distress

DOCKSIDE

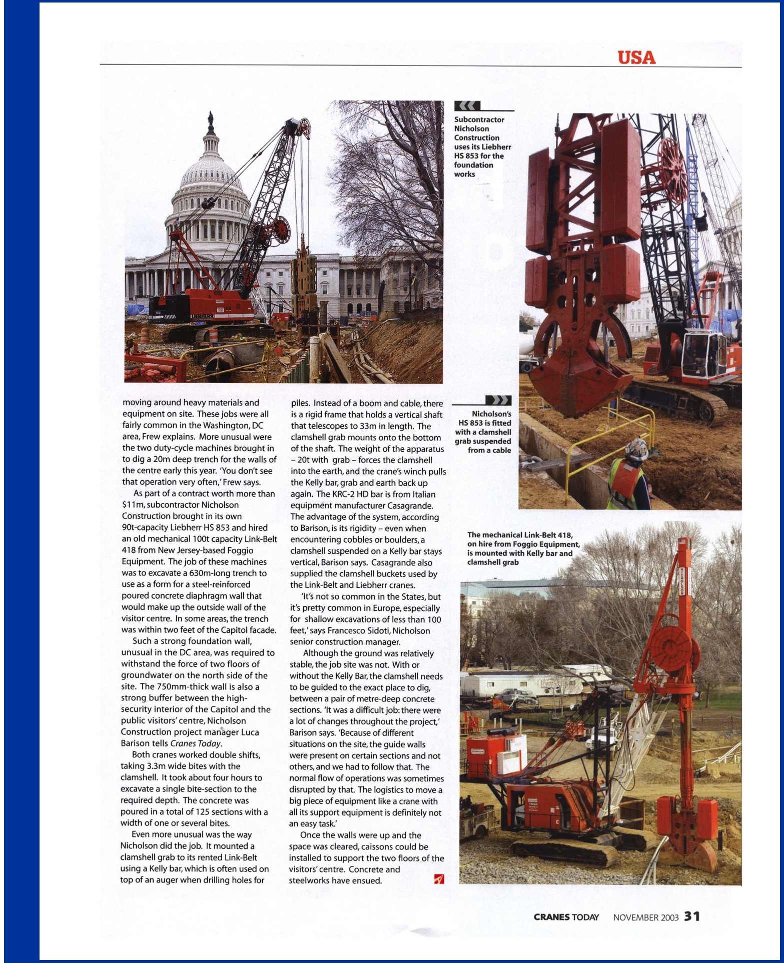
Elevating trolley girder

Baltkran in focus

www.ConnectingCranes.com

UK £13.00, Rest of Europe £15.00

N. America US$28.00, Rest of world £18.50



USA

Subcontractor Nicholson Construction uses its Liebherr HS 853 for the foundation works

moving around heavy materials and equipment on site. These jobs were all fairly common in the Washington, DC area, Frew explains. More unusual were the two duty-cycle machines brought in to dig a 20m deep trench for the walls of the centre early this year. 'You don't see that operation very often,' Frew says.

As part of a contract worth more than $11m, subcontractor Nicholson Construction brought in its own 90t-capacity Liebherr HS 853 and hired an old mechanical 100t capacity Link-Belt 418 from New Jersey-based Foggio Equipment. The job of these machines was to excavate a 630m-long trench to use as a form for a steel-reinforced poured concrete diaphragm wall that would make up the outside wall of the visitor centre. In some areas, the trench was within two feet of the Capitol facade.

Such a strong foundation wall, unusual in the DC area, was required to withstand the force of two floors of groundwater on the north side of the site. The 750mm-thick wall is also a strong buffer between the high-security interior of the Capitol and the public visitors' centre, Nicholson Construction project manager Luca Barison tells *Cranes Today*.

Both cranes worked double shifts, taking 3.3m wide bites with the clamshell. It took about four hours to excavate a single bite-section to the required depth. The concrete was poured in a total of 125 sections with a width of one or several bites.

Even more unusual was the way Nicholson did the job. It mounted a clamshell grab to its rented Link-Belt using a Kelly bar, which is often used on top of an auger when drilling holes for piles. Instead of a boom and cable, there is a rigid frame that holds a vertical shaft that telescopes to 33m in length. The clamshell grab mounts onto the bottom of the shaft. The weight of the apparatus – 20t with grab – forces the clamshell into the earth, and the crane's winch pulls the Kelly bar, grab and earth back up again. The KRC-2 HD bar is from Italian equipment manufacturer Casagrande. The advantage of the system, according to Barison, is its rigidity – even when encountering cobbles or boulders, a clamshell suspended on a Kelly bar stays vertical, Barison says. Casagrande also supplied the clamshell buckets used by the Link-Belt and Liebherr cranes.

'It's not so common in the States, but it's pretty common in Europe, especially for shallow excavations of less than 100 feet,' says Francesco Sidoti, Nicholson senior construction manager.

Although the ground was relatively stable, the job site was not. With or without the Kelly Bar, the clamshell needs to be guided to the exact place to dig, between a pair of metre-deep concrete sections. 'It was a difficult job: there were a lot of changes throughout the project,' Barison says. 'Because of different situations on the site, the guide walls were present on certain sections and not others, and we had to follow that. The normal flow of operations was sometimes disrupted by that. The logistics to move a big piece of equipment like a crane with all its support equipment is definitely not an easy task.'

Once the walls were up and the space was cleared, caissons could be installed to support the two floors of the visitors' centre. Concrete and steelworks have ensued.

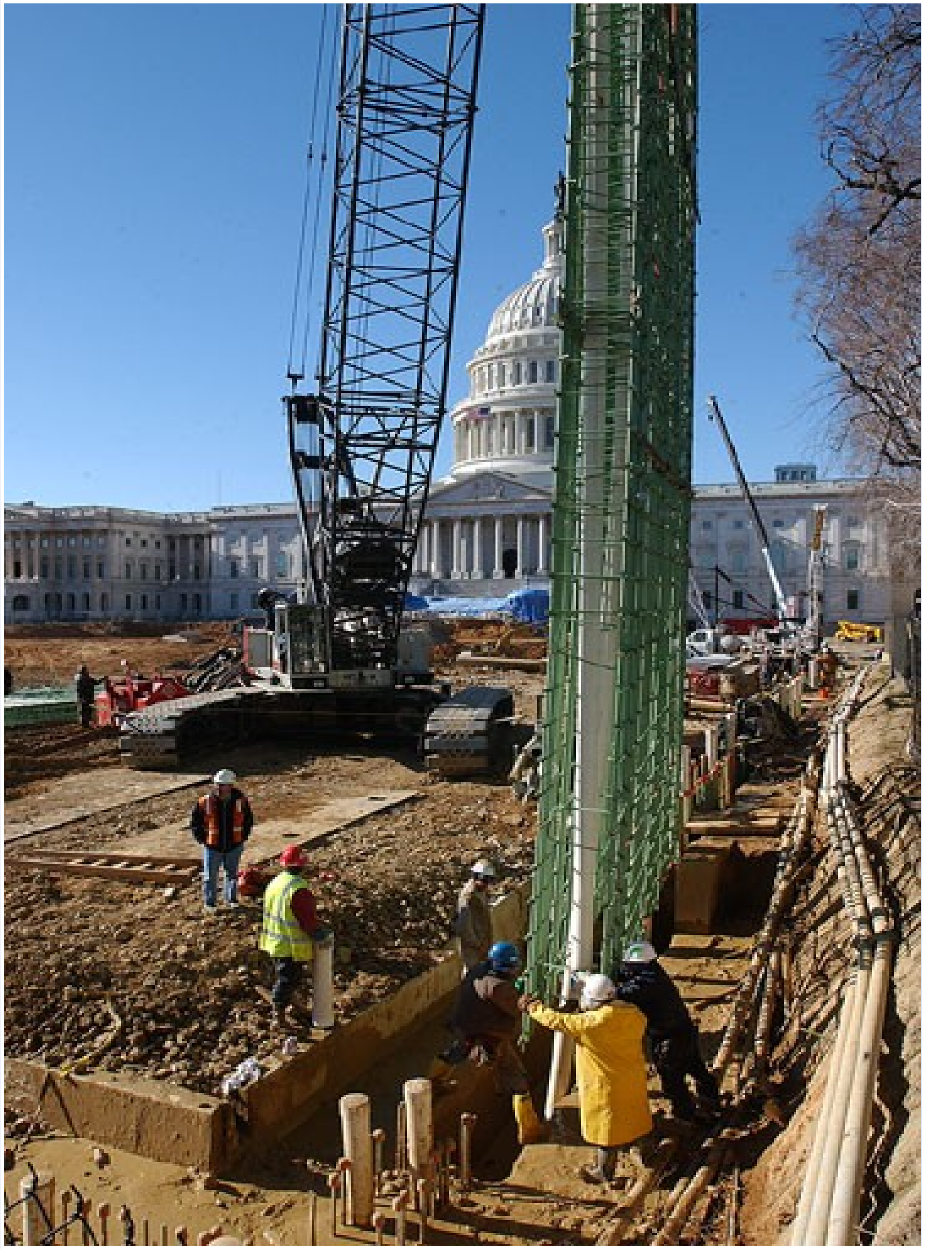
Nicholson's HS 853 is fitted with a clamshell grab suspended from a cable

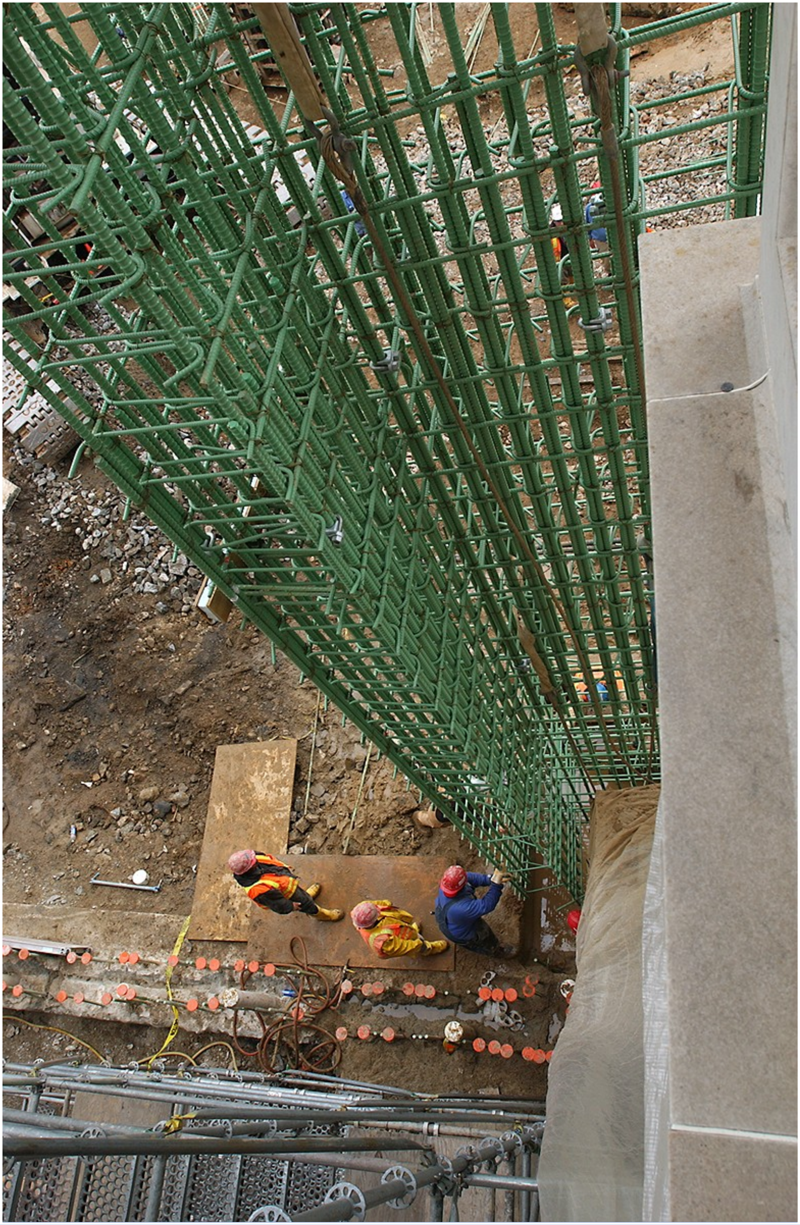
The mechanical Link-Belt 418, on hire from Foggio Equipment, is mounted with Kelly bar and clamshell grab

CRANES TODAY NOVEMBER 2003 31

Capitol Visitor Center

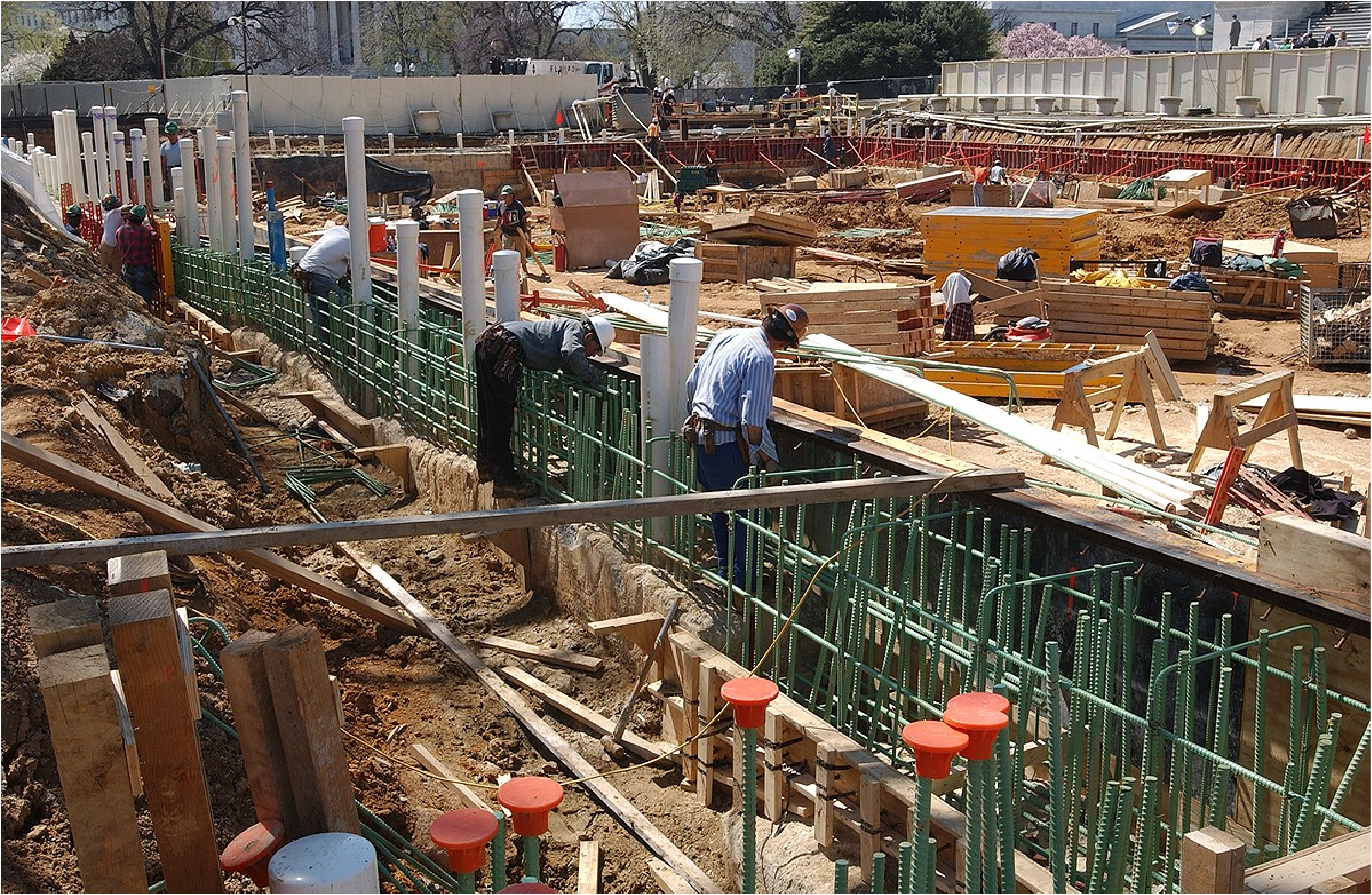
Foundation Walls -
Rebar Cage Installation





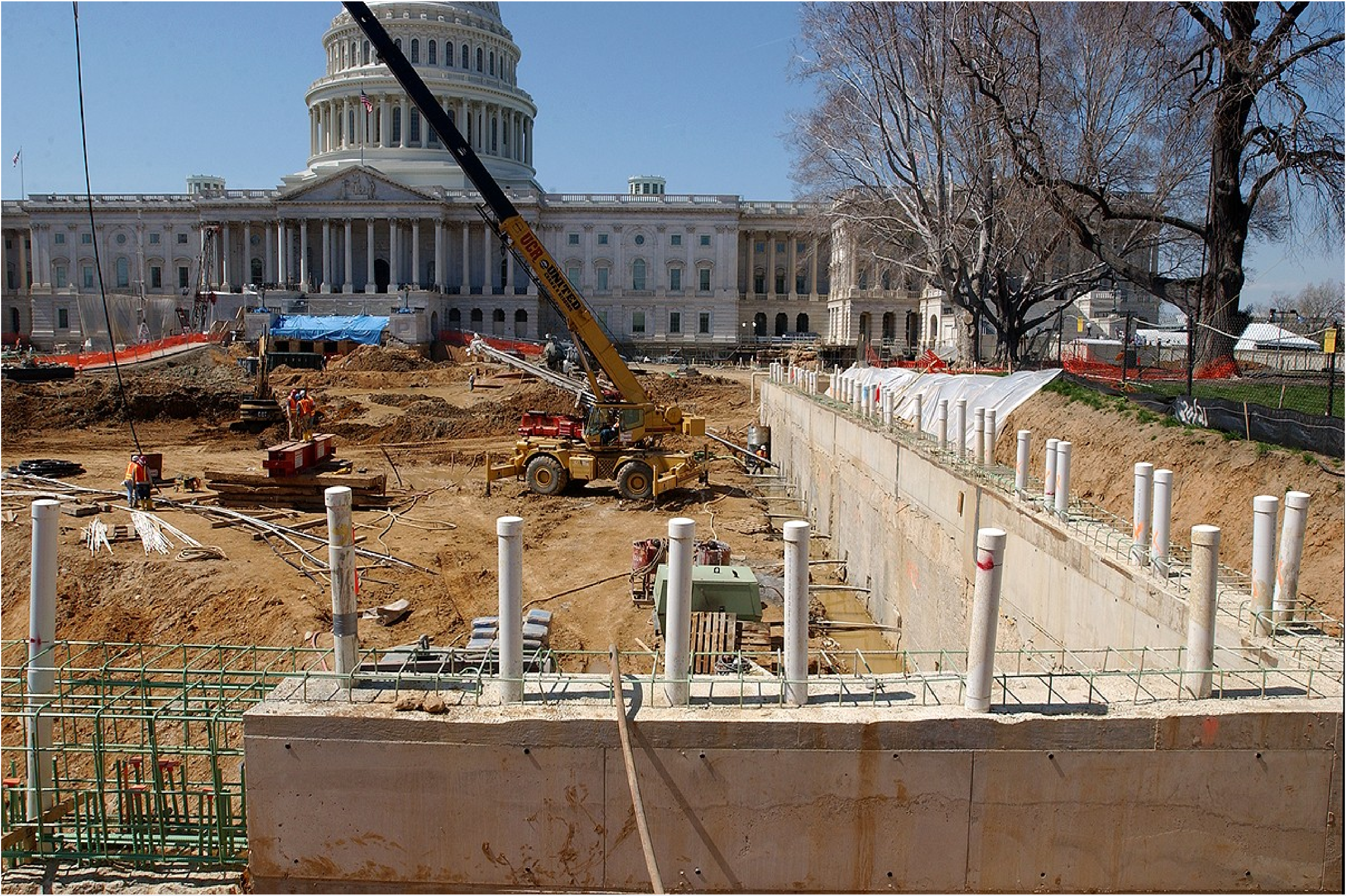
Capitol Visitor Center

Construction of Foundation Walls - Excavation



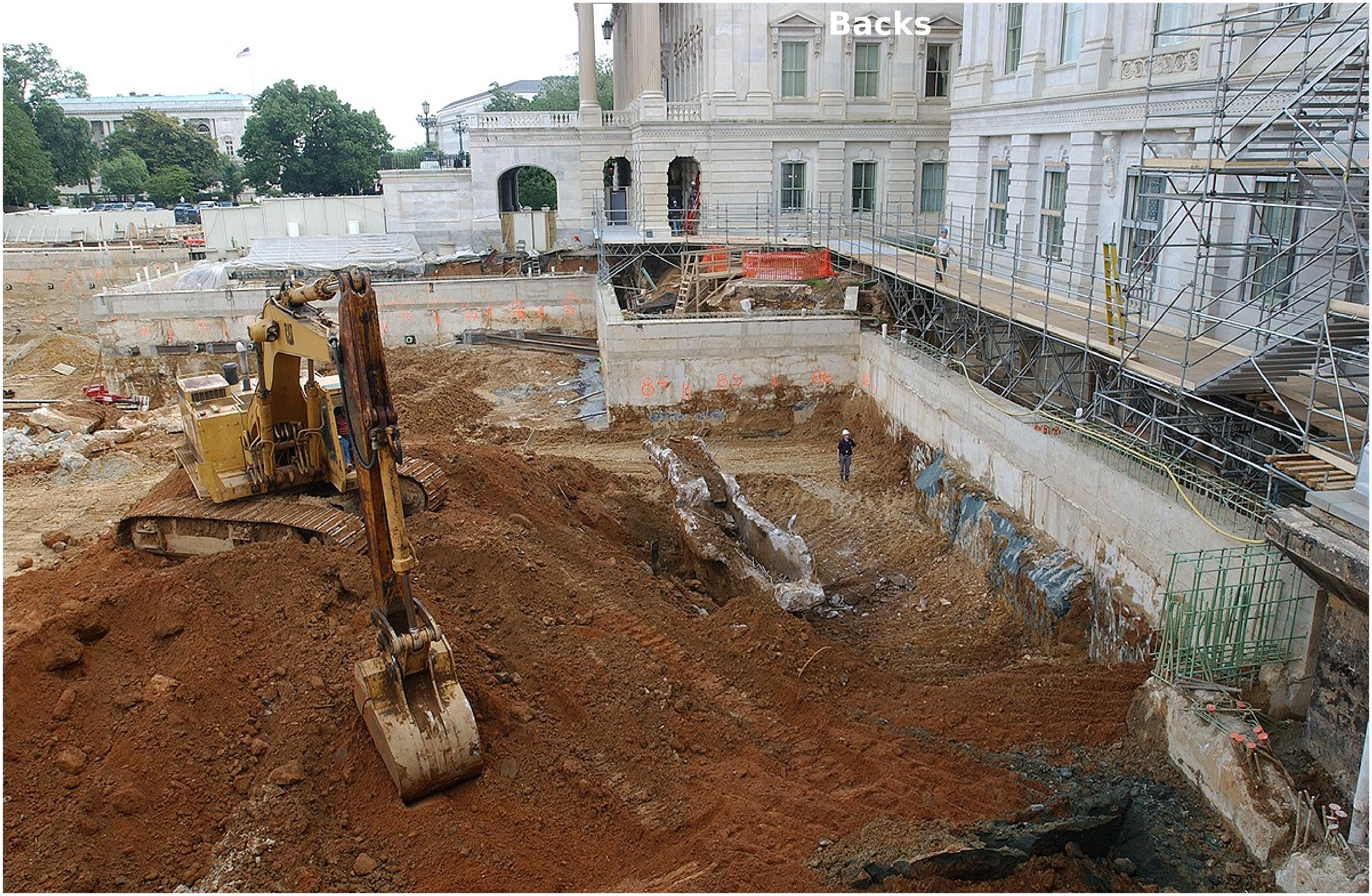
Capitol Visitor Center

Construction of Foundation Walls



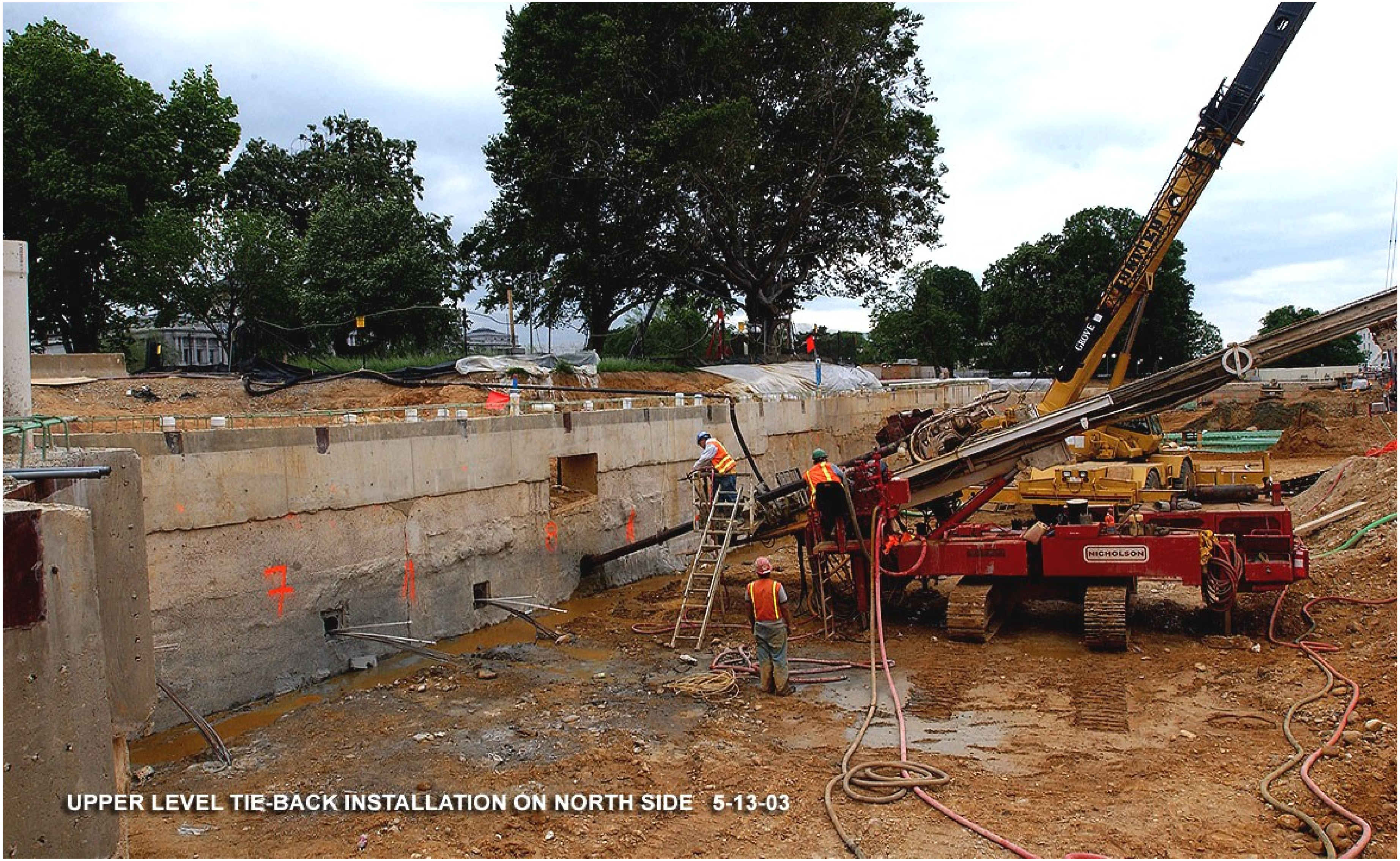
Capitol Visitor Center

Excavation Reveals Slurry Walls
Clears First Level for Tie-Backs



Capitol Visitor Center

Excavation Reveals Slurry Walls Clears First Level for Tie-Backs

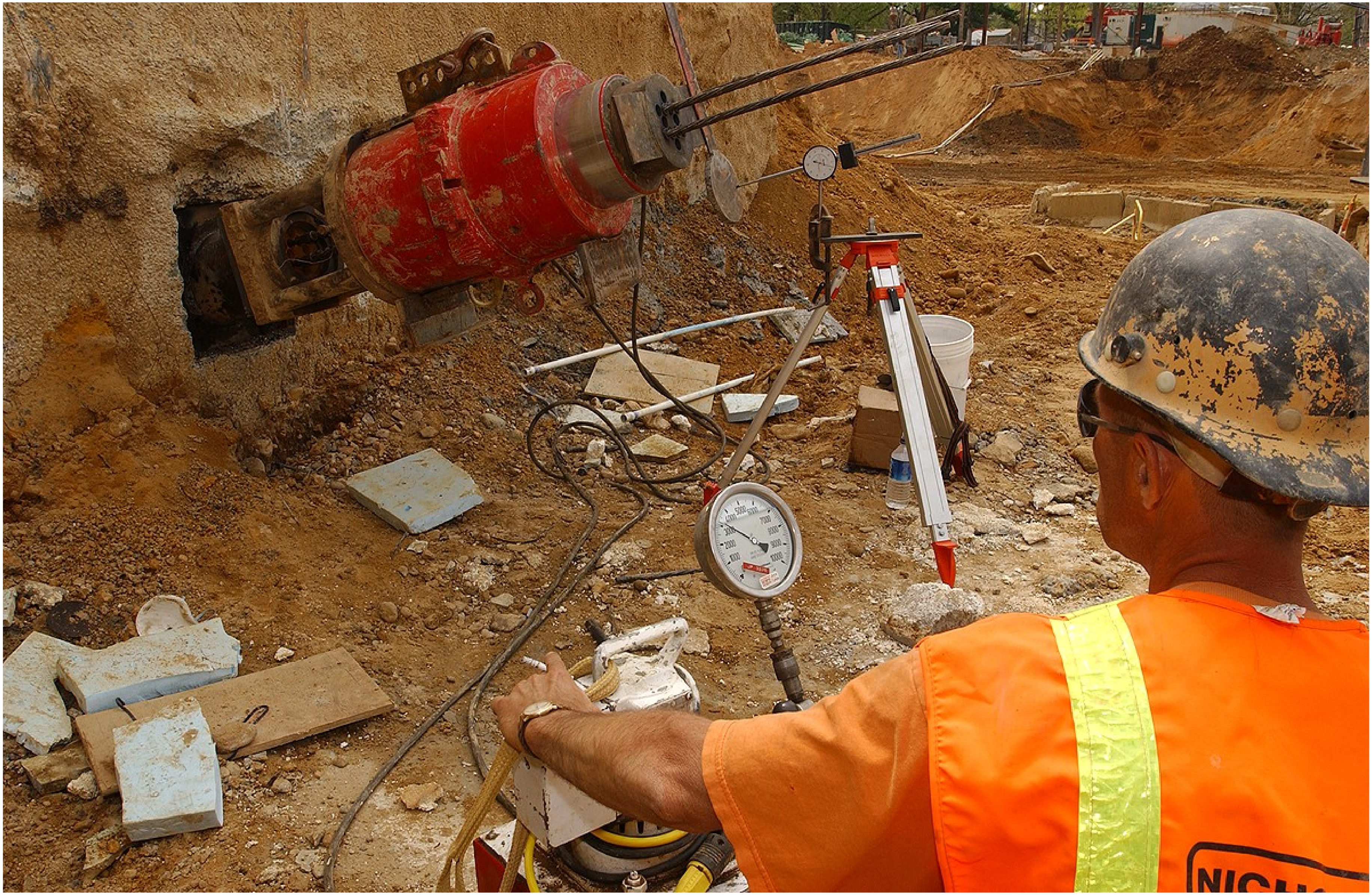


UPPER LEVEL TIE-BACK INSTALLATION ON NORTH SIDE 5-13-03

GROVE
UNITED
NICHOLSON
7
8

Capitol Visitor Center

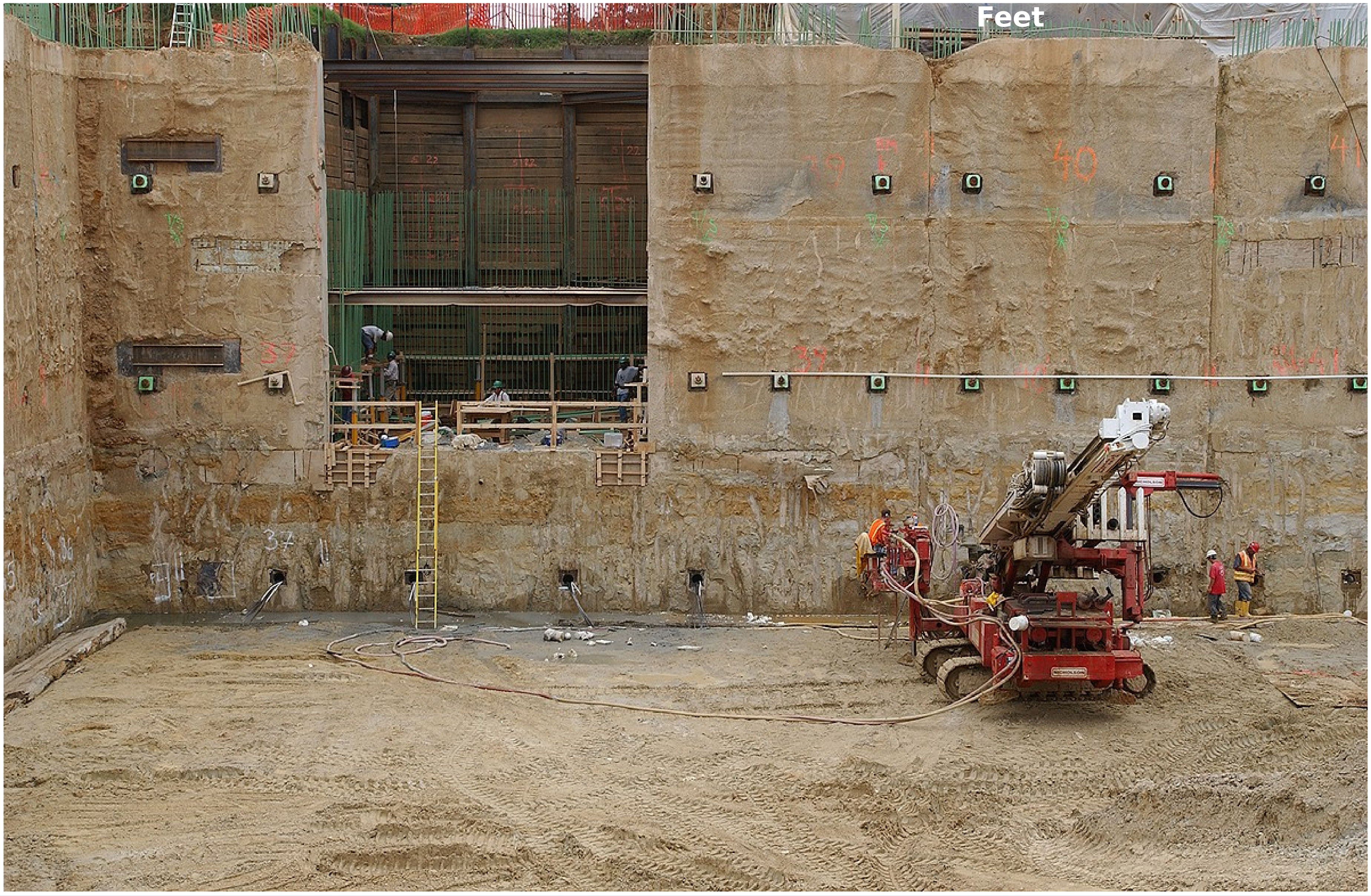
Tie-Back Tensioning



Capitol Visitor Center

Tie-Back Installation:

3 Tie-Back Levels
494 Total
Longest - 110 Feet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40
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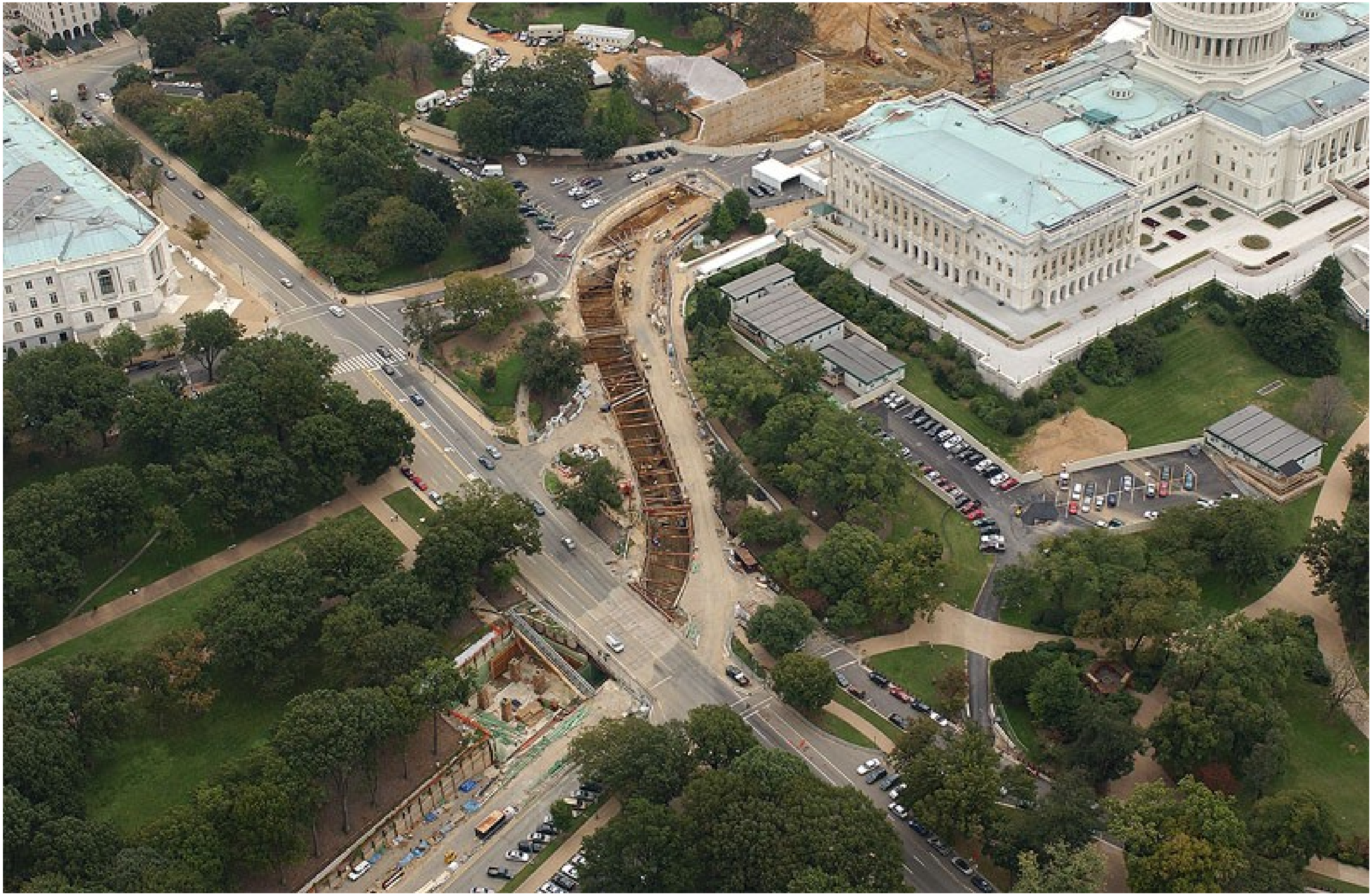
38

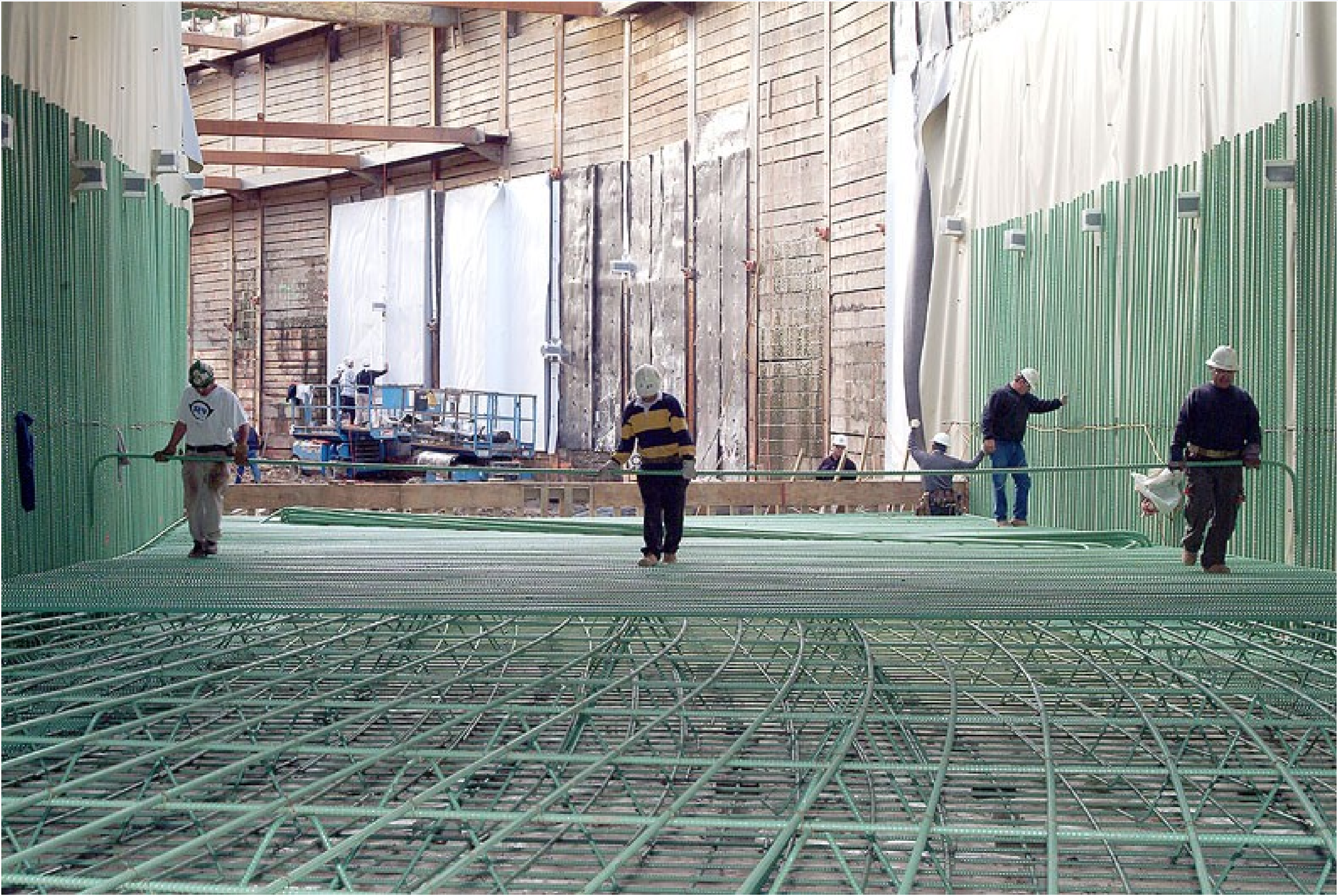
Capitol Visitor Center

Construction of New Truck Tunnel



Capitol Visitor Center

Construction of New Truck Tunnel



Capitol Visitor Center

Record Rainfall Amounts in 2003

Capitol Visitor Center

Record Rainfall Amounts in 2003

Capitol Visitor Center

Unforeseen Site Condition

Capitol Visitor Center

Unforeseen Site Conditio

Capitol Visitor Center

First Column is Raised
September 5, 2003

Capitol Visitor Center

Congressional Oversight - House

MR.SPEA
Canon

Capitol Visitor Center

Congressional Oversight - Senate

Capitol Visitor Center

Steel Roof Decking Installation

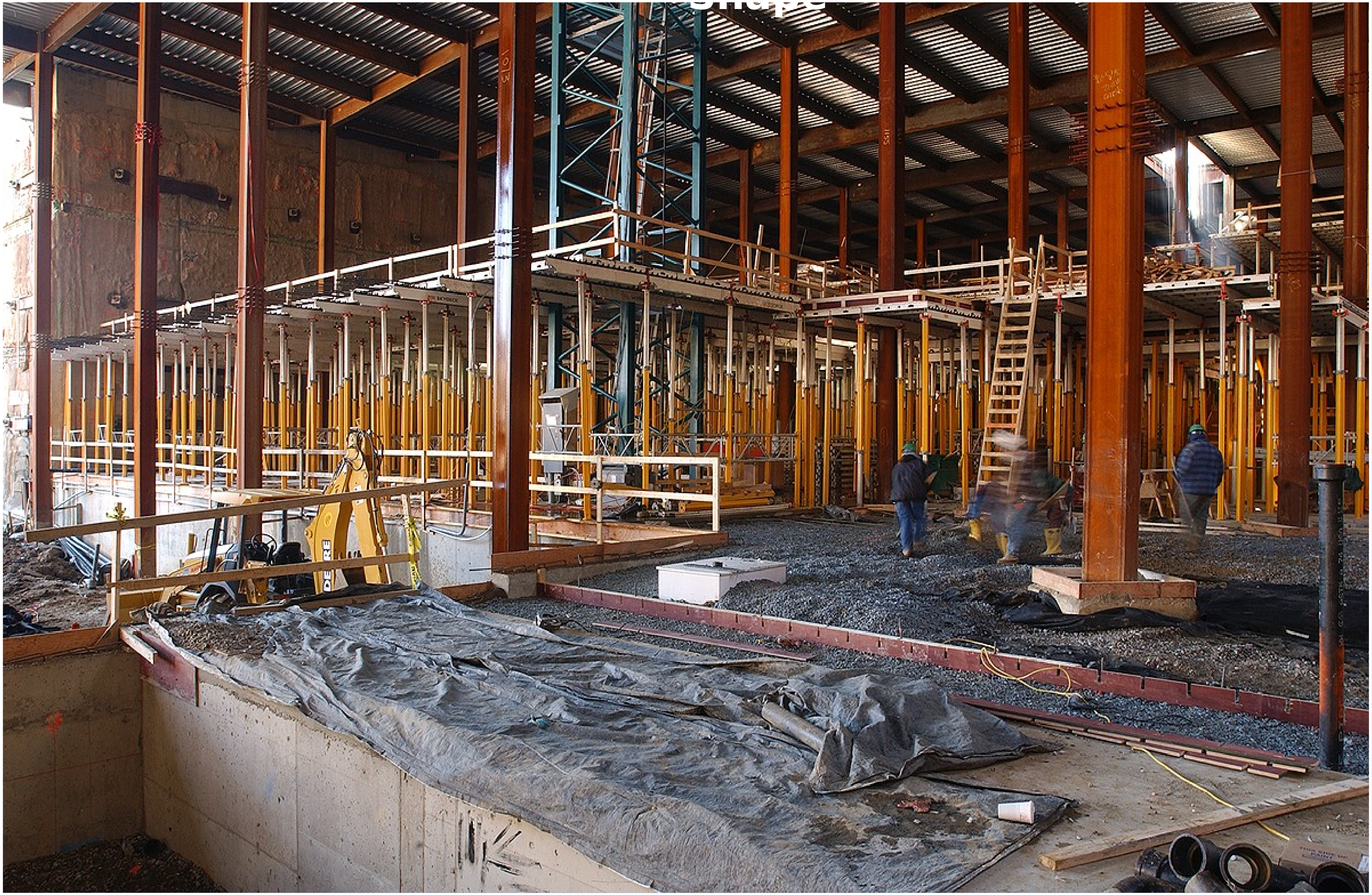
Capitol Visitor Center

Concrete Placement on the Roof Deck

GRACE
Bituthene

Capitol Visitor Center

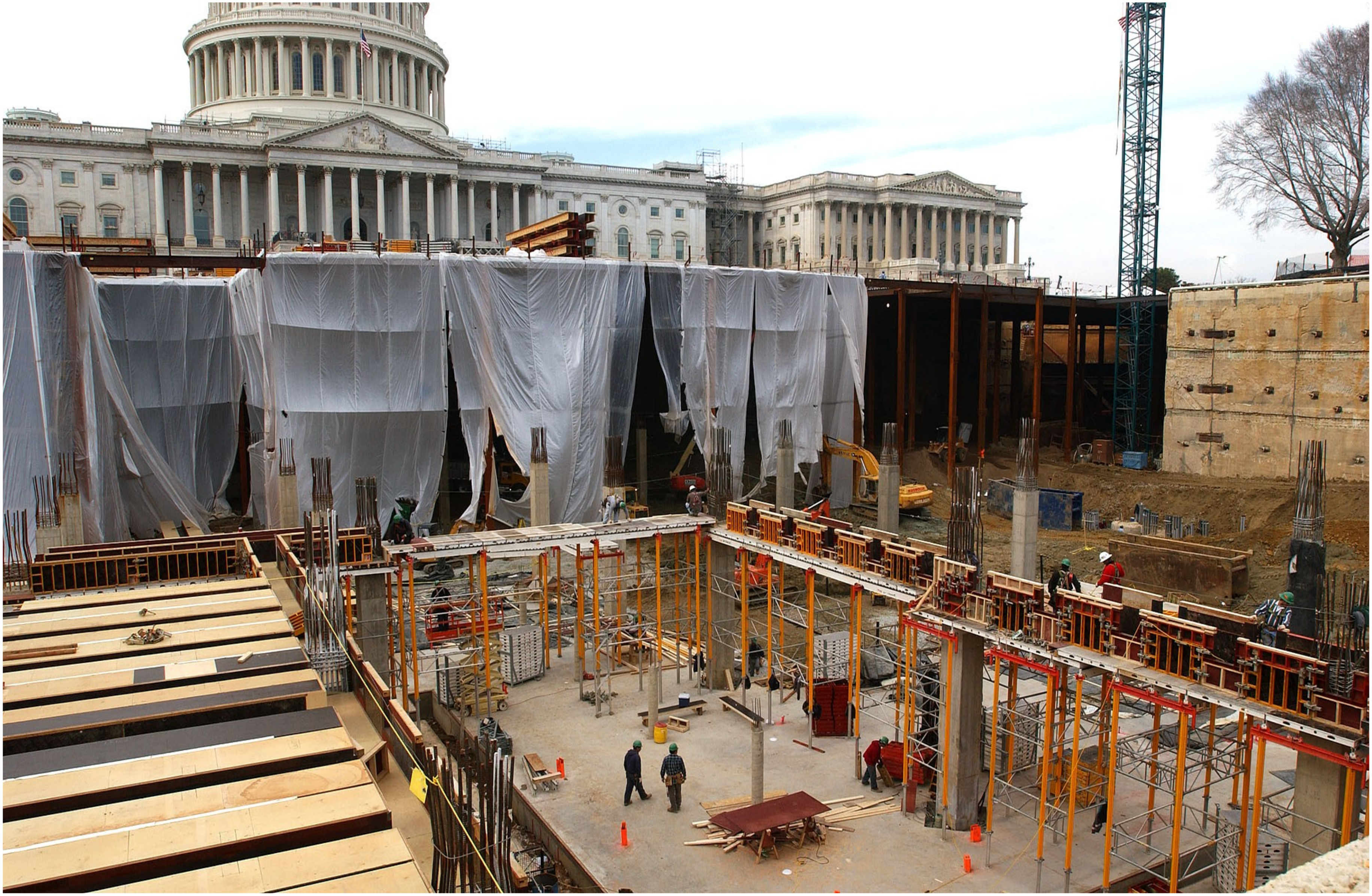
Below Deck, Interior Takes Shape



G7
G8

Capitol Visitor Center

Formwork, concrete placements ongoing

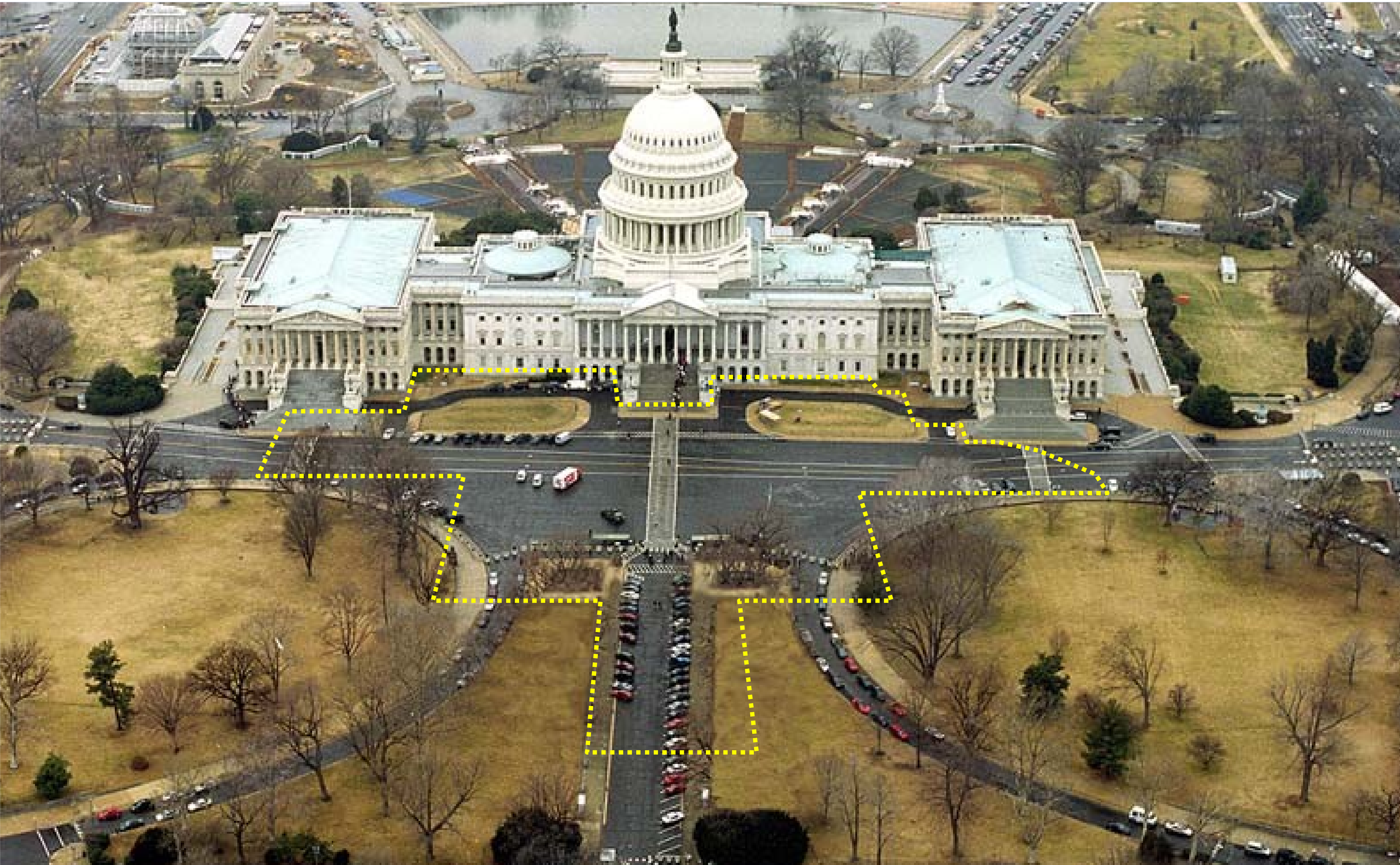


HUGO
HUGO

Capitol Visitor Center

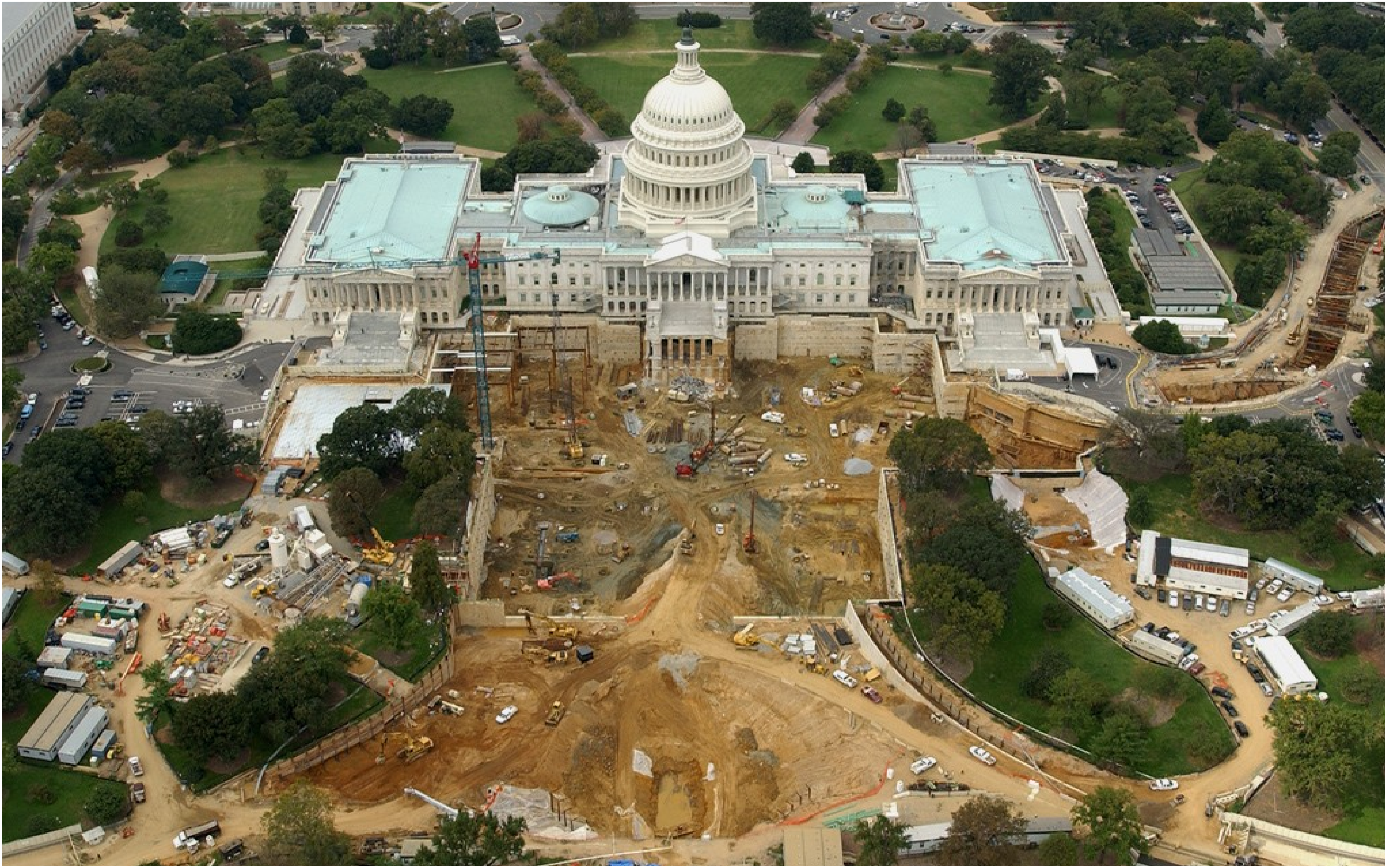
Before We

Plaza marked by asphalt parking ar



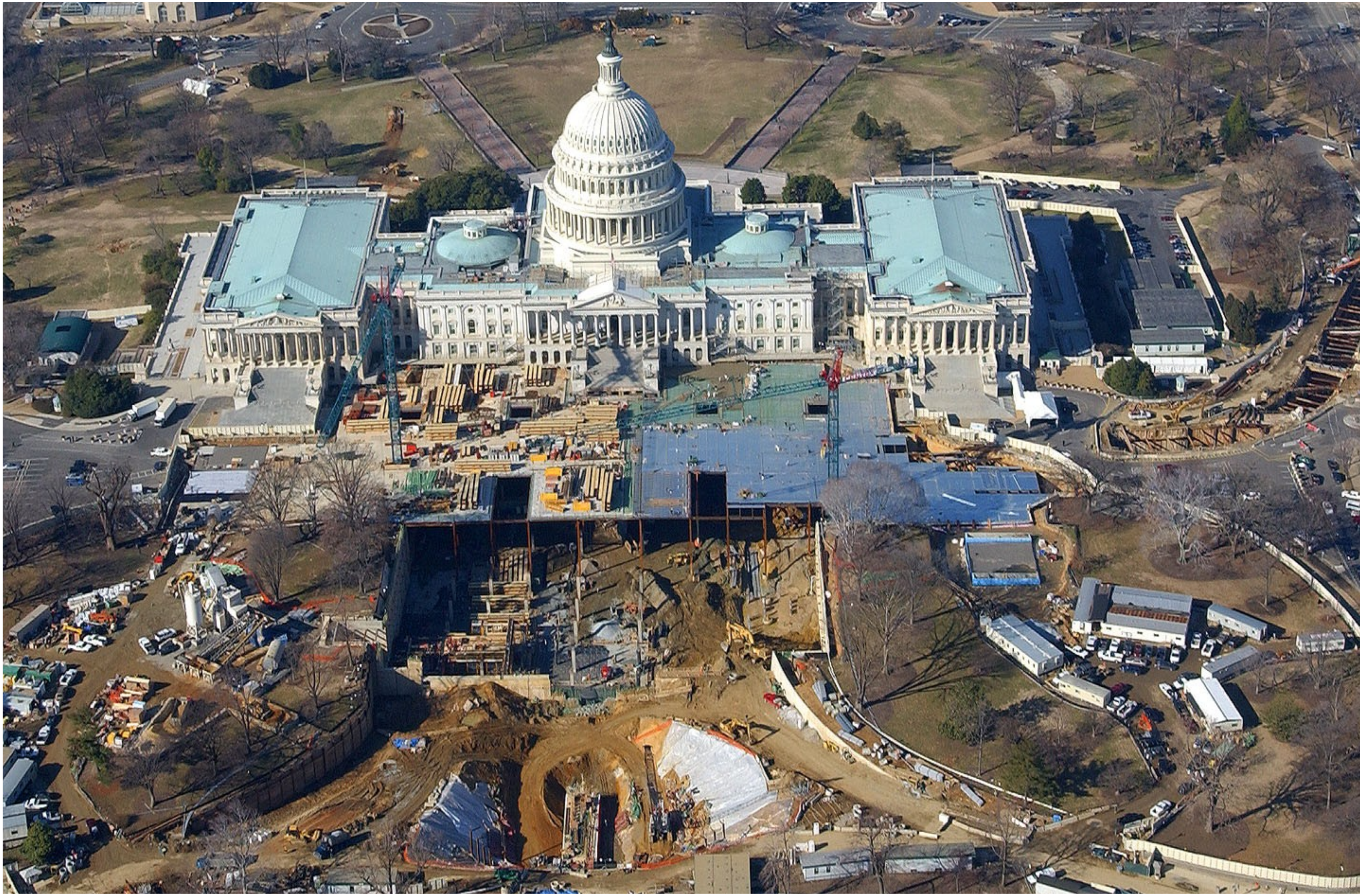
Capitol Visitor Center

October



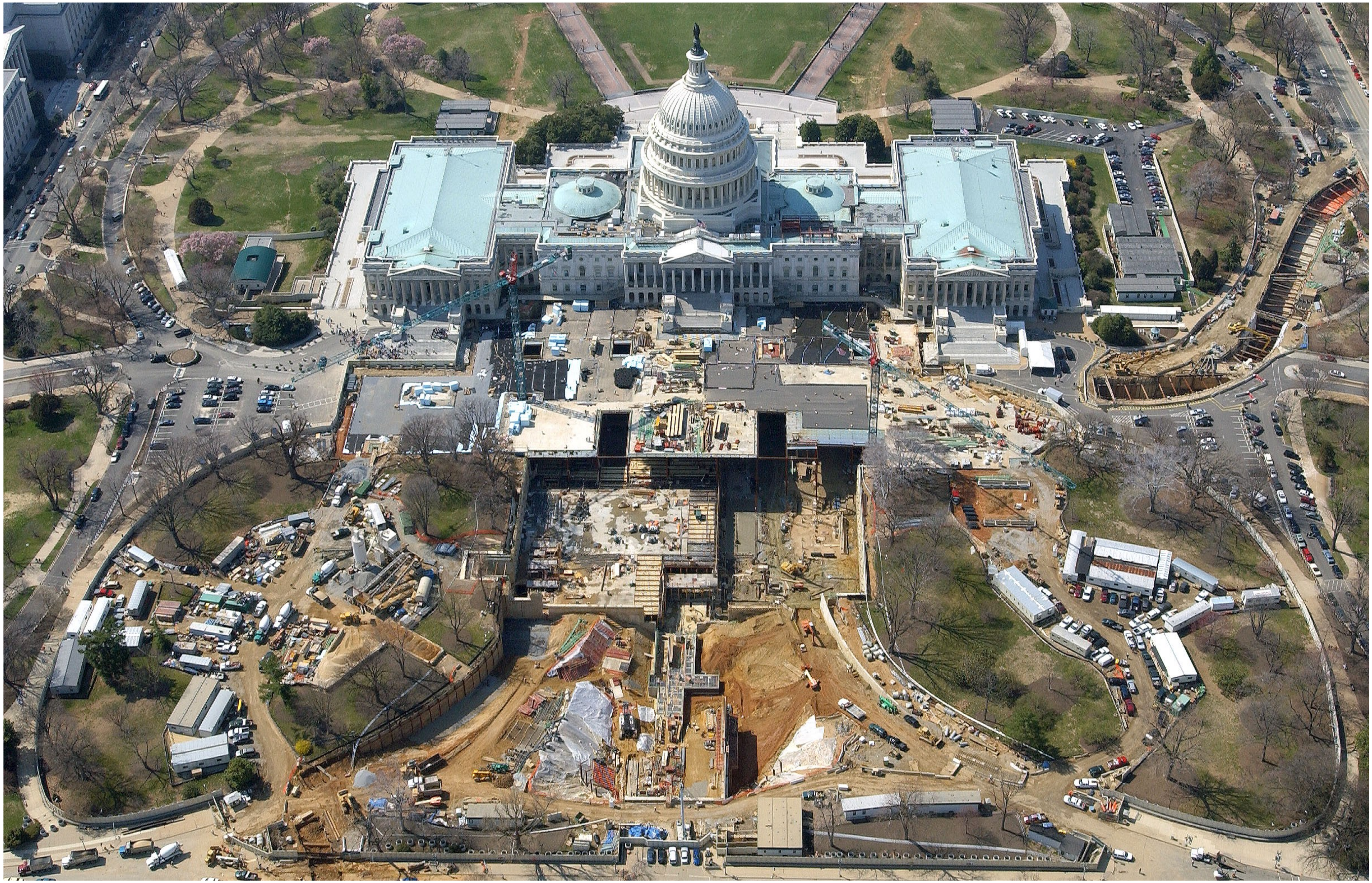
Capitol Visitor Center

February



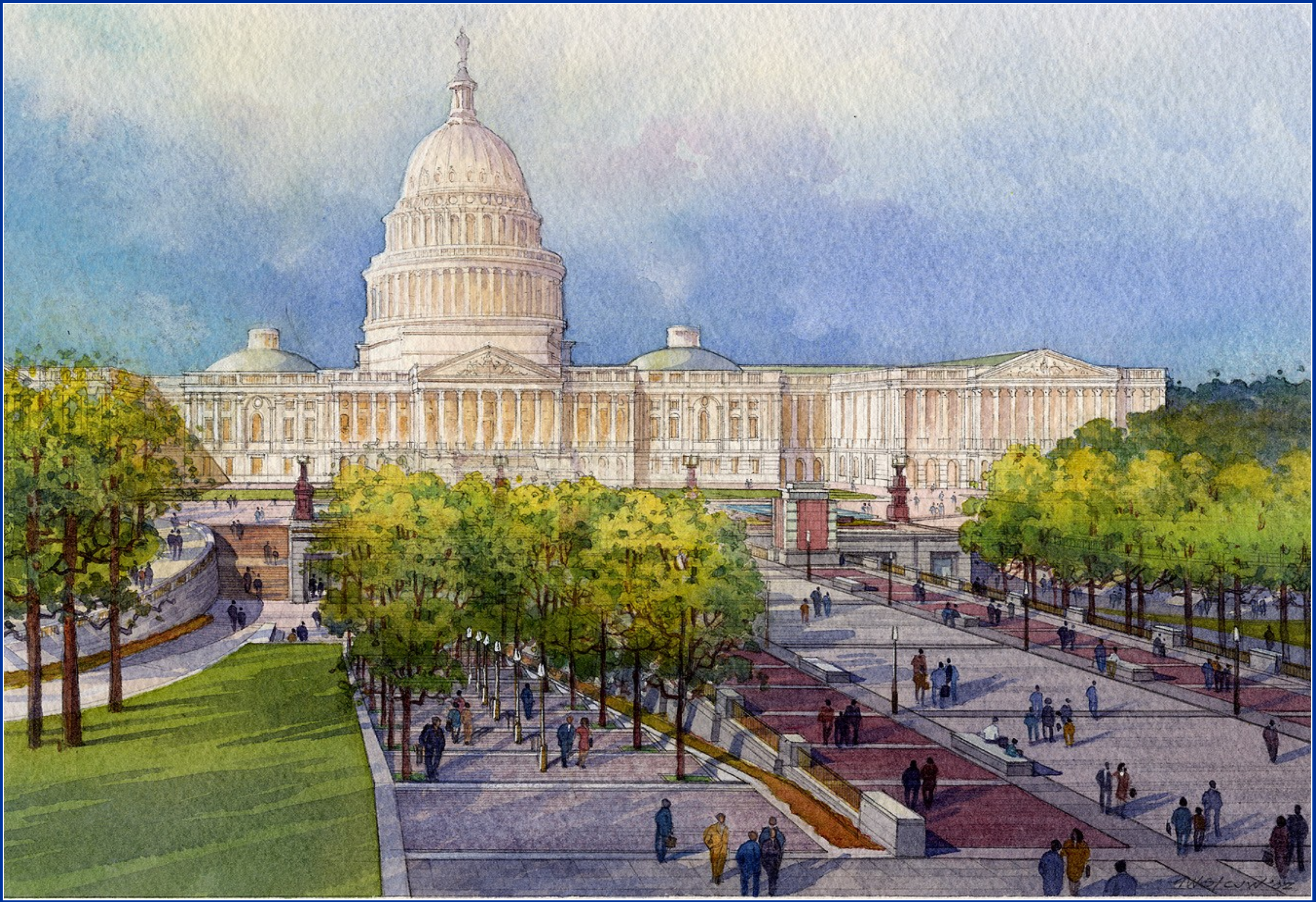
Capitol Visitor Center

March



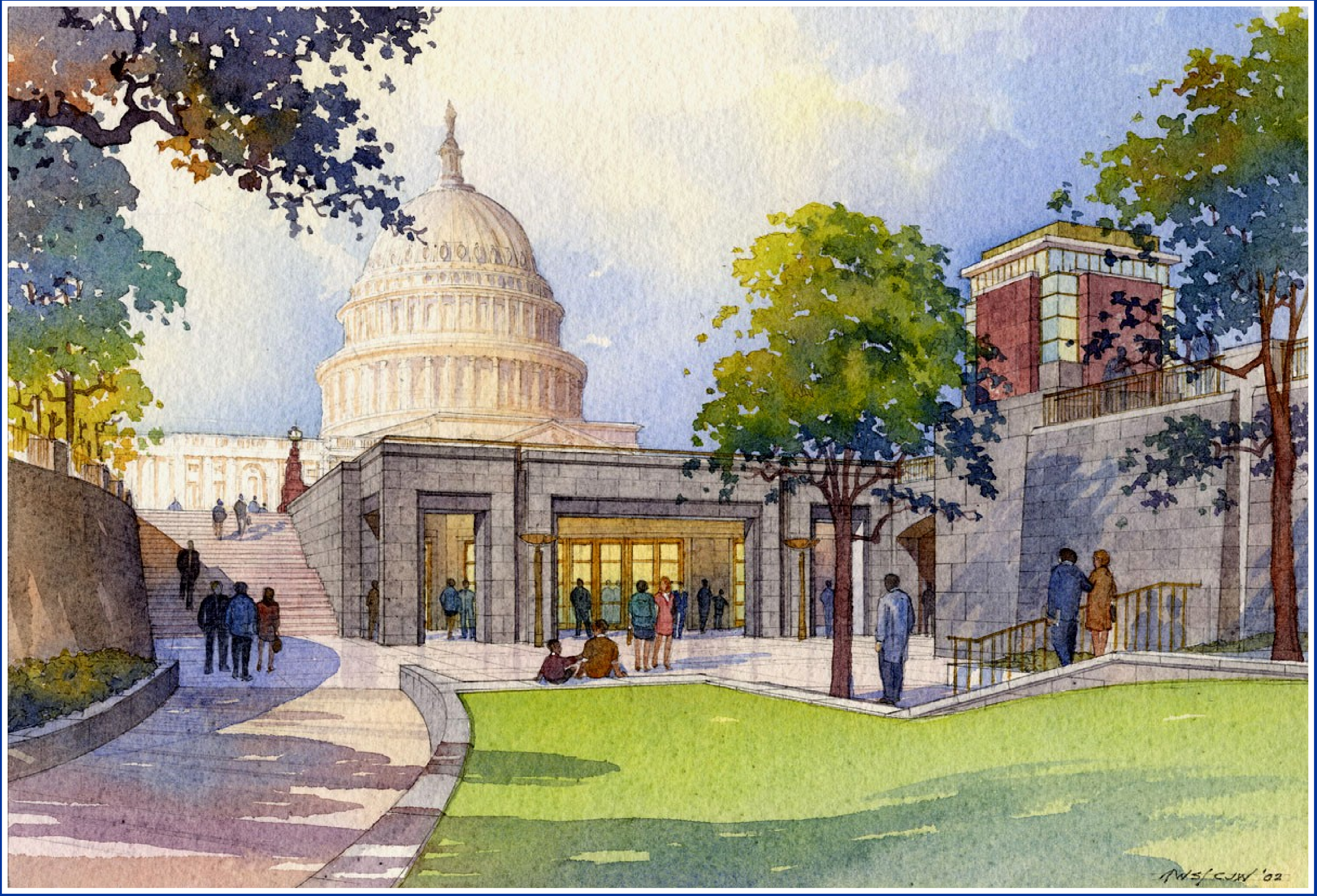
Capitol Visitor Center

East Front Plaza - Spring 20



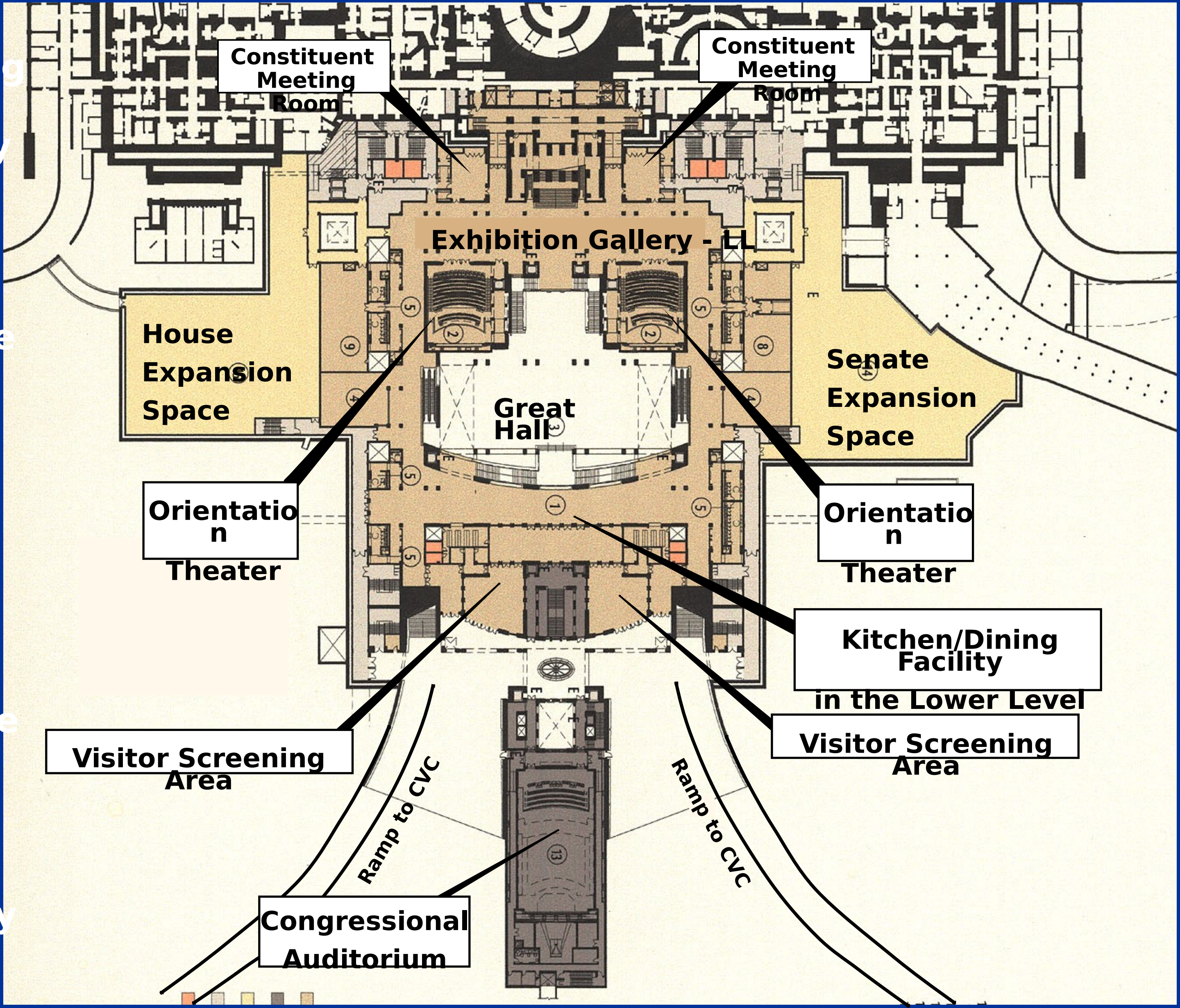
Capitol Visitor Center

Visitor Center Entranc



CVC Floor Plan

- Visitor Screening
- Vertical mobility throughout
- Great Hall
- Exhibition Space
- Two Orientation Theaters
- Auditorium
- Dining Facility 600 seats
- Expansion Space
- Secure Truck Loading
- Full Accessibility



Constituent Meeting Room

Constituent Meeting Room

Exhibition Gallery - LL

House Expansion Space

Great Hall

Senate Expansion Space

Orientation Theater

Orientation Theater

Kitchen/Dining Facility in the Lower Level

Visitor Screening Area

Visitor Screening Area

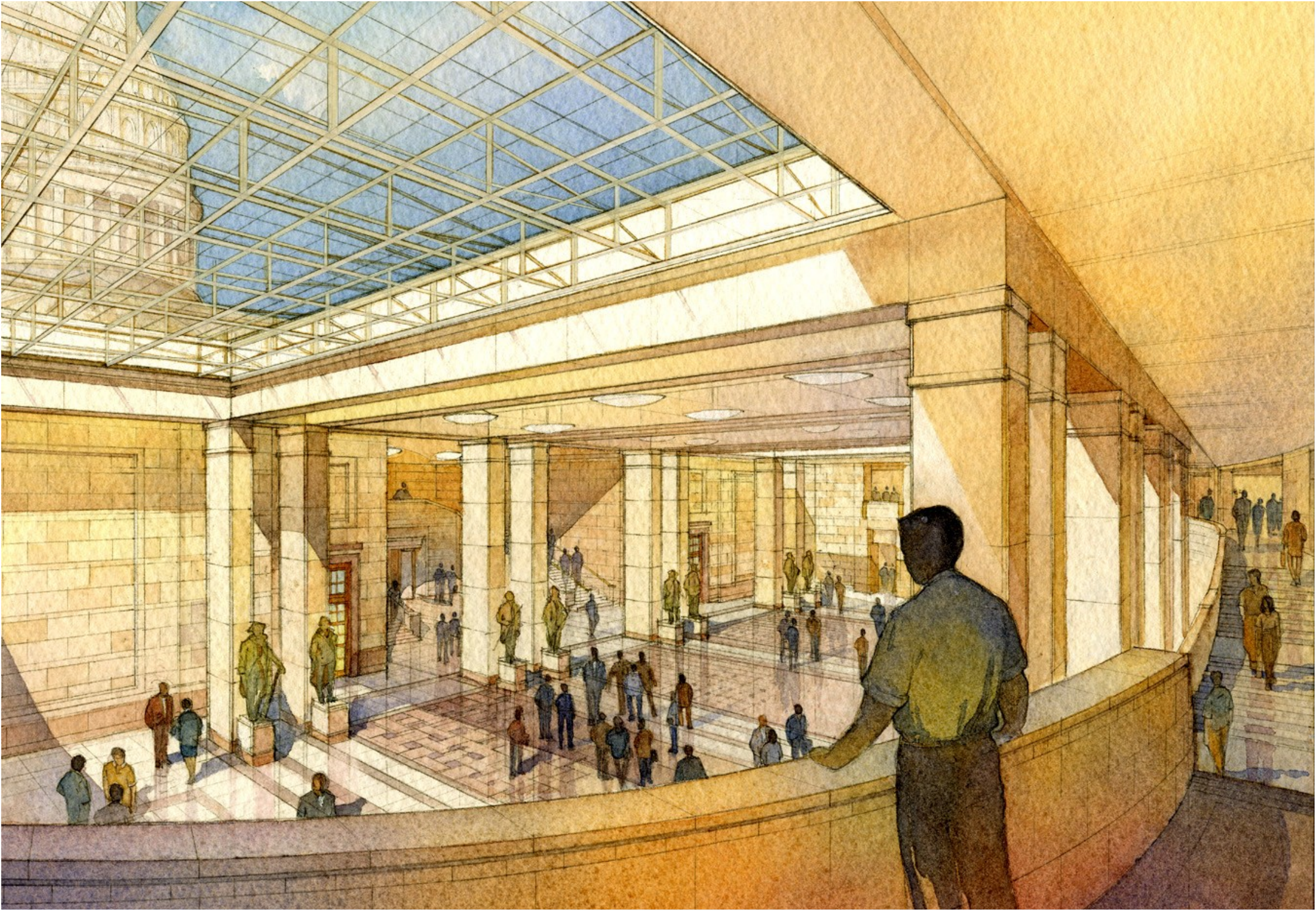
Ramp to CVC

Ramp to CVC

Congressional Auditorium

Capitol Visitor Center

The Great Hall

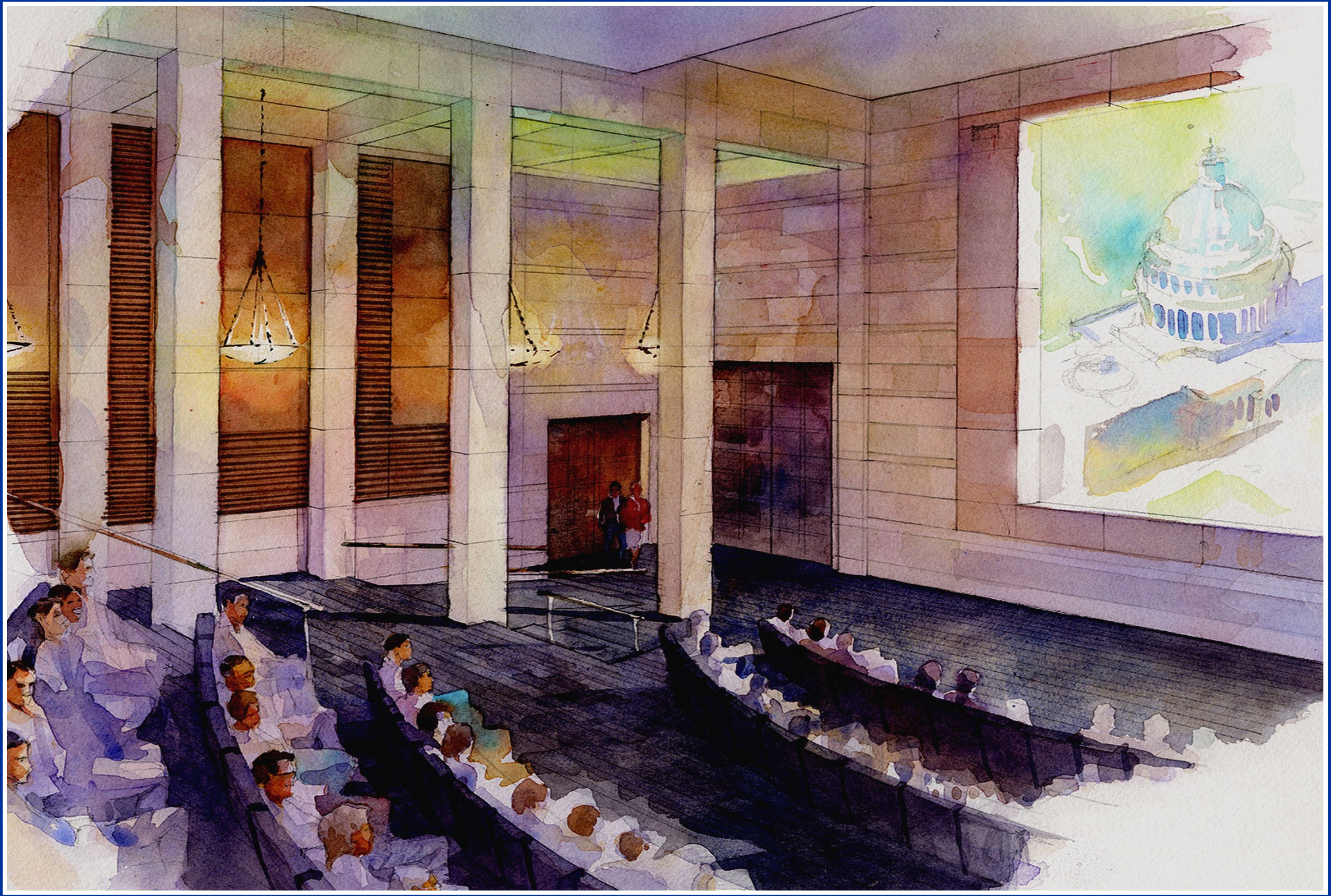


Capitol Visitor Center

The Great Hal

Capitol Visitor Center

Orientation Theaters



Capitol Visitor Cente

The Exhibition Gallery

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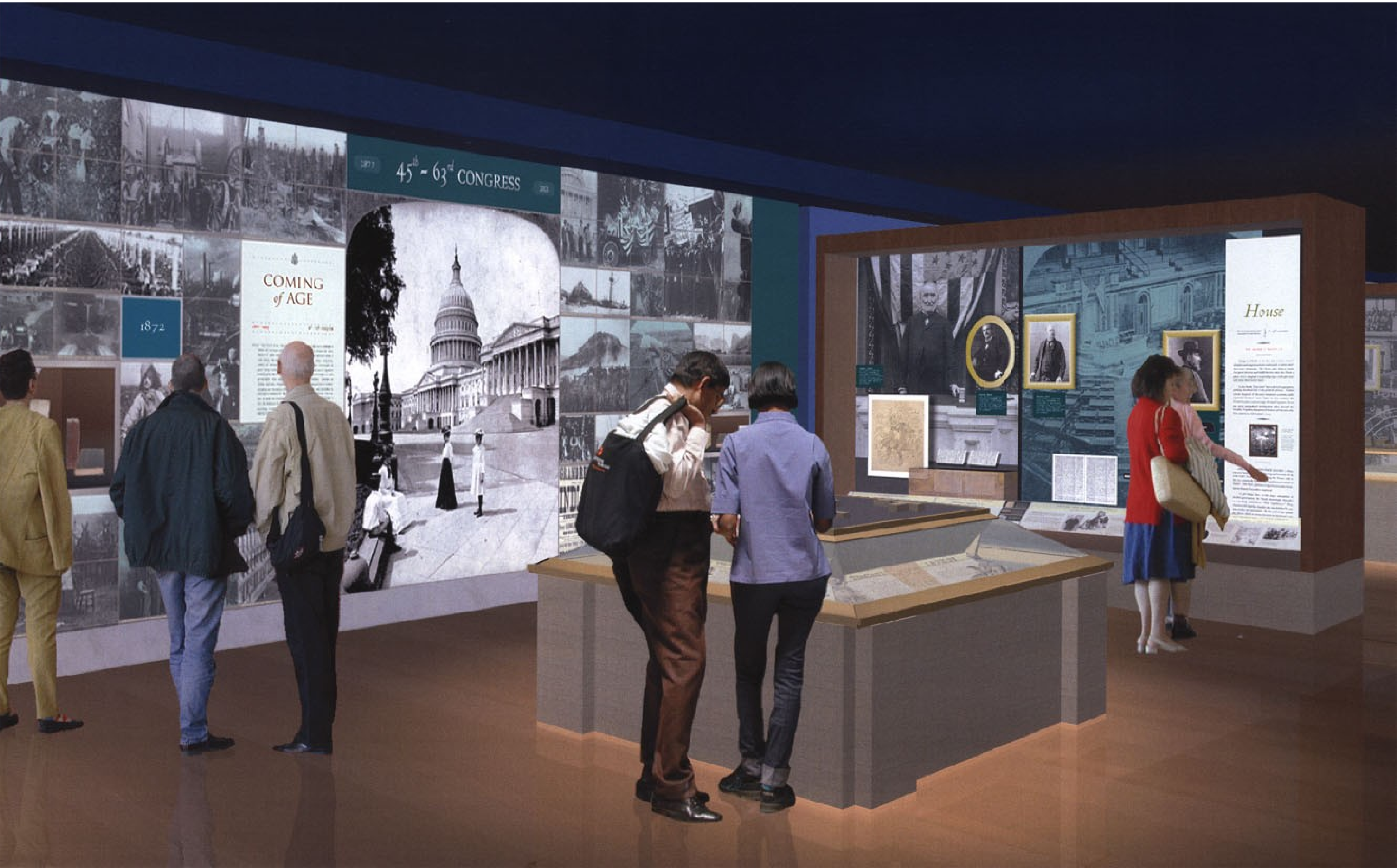
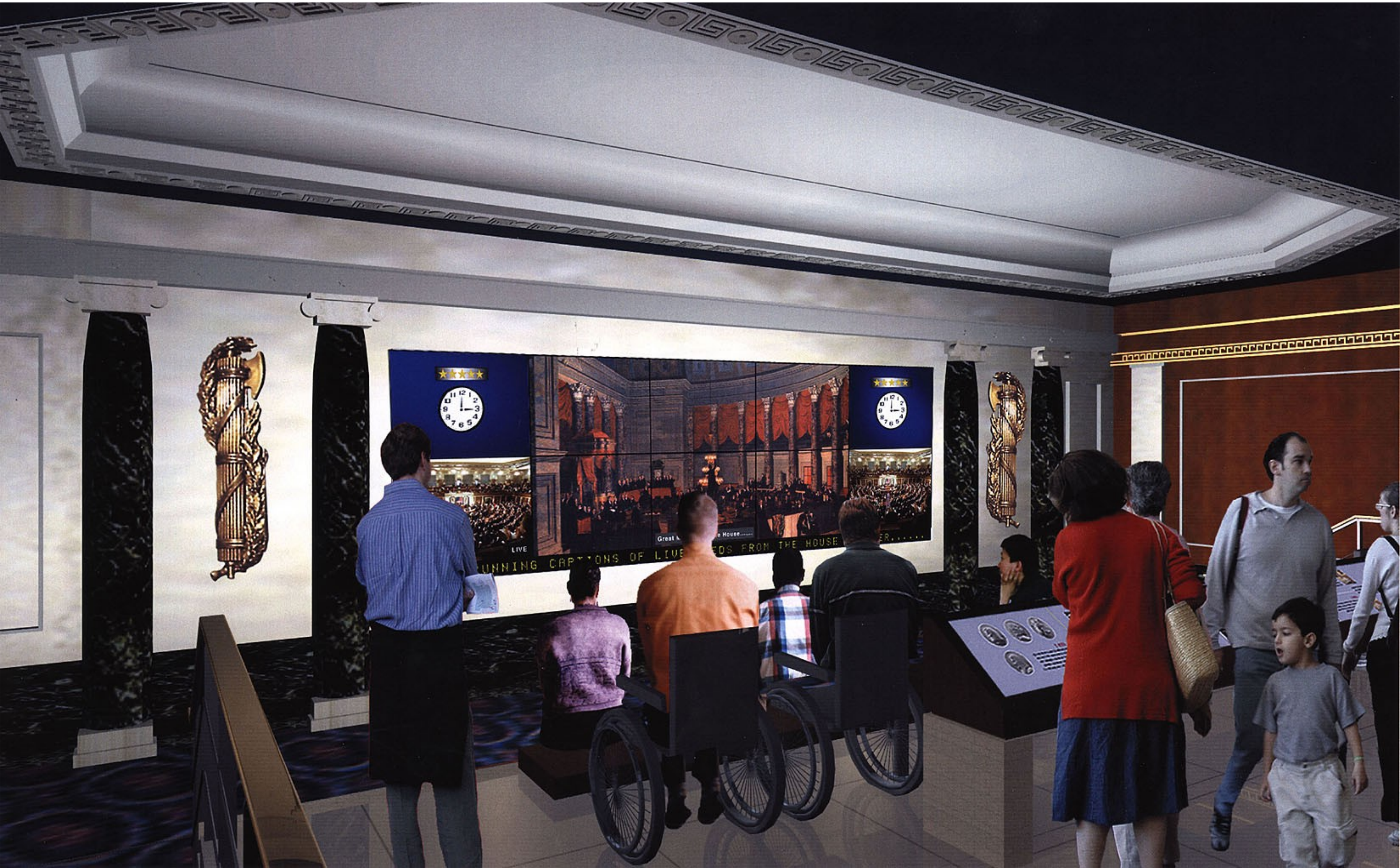
E PLURIBUS UNUM
OUT OF MANY, ONE
ONE CONGRESS, TWO INSTITUTIONS
THE HOUSE
THE SENATE

Capitol Visitor Center

The Exhibition Galler


45th - 63rd CONGRESS
COMING of AGE
1872
House

The Exhibition Galler


LIVE
Great
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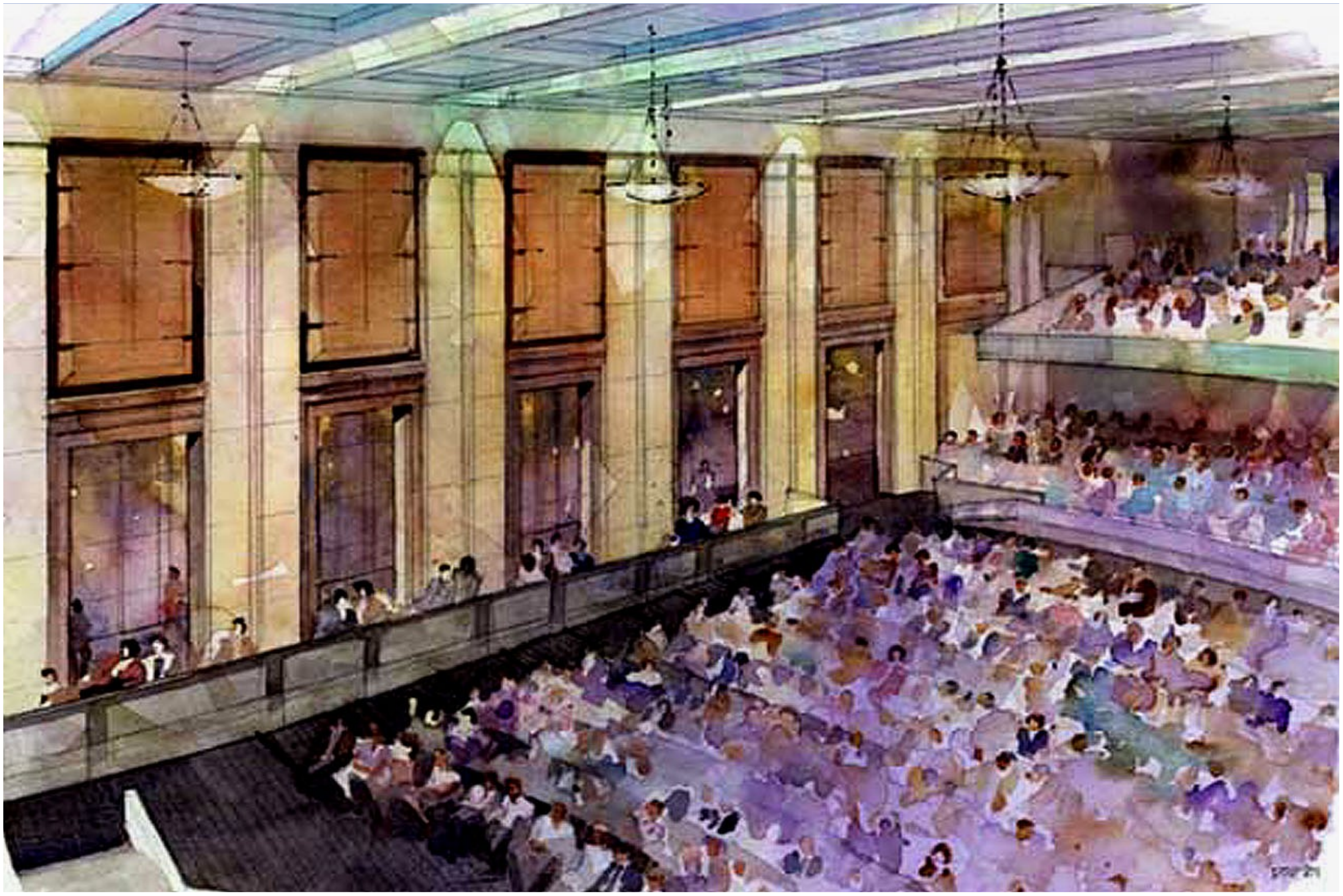
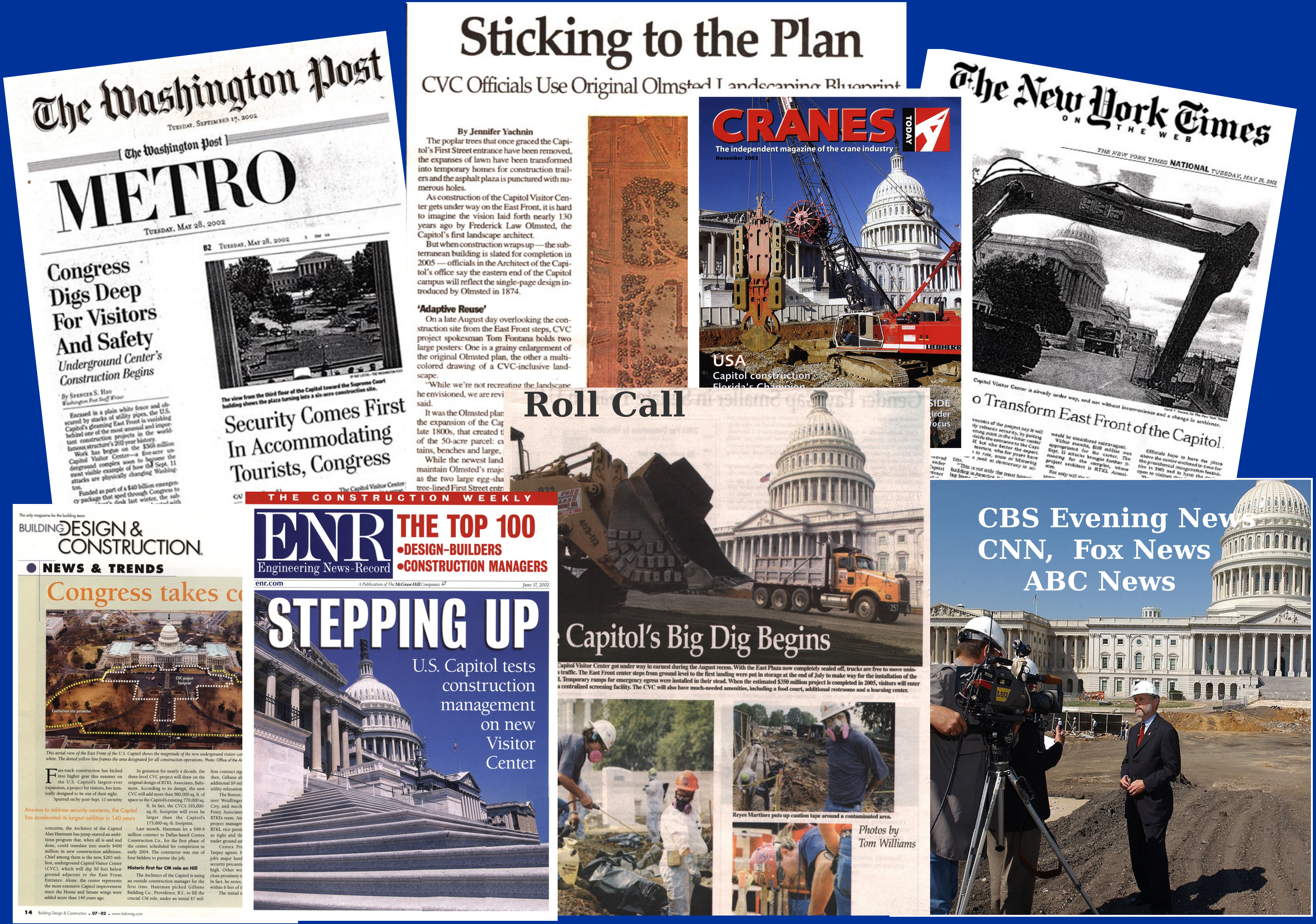


Capitol Visitor Center

Media Coverage



The Washington Post

Tuesday, September 17, 2002

[The Washington Post]

METRO

Tuesday, May 28, 2002

Congress Digs Deep For Visitors And Safety

Underground Center's Construction Begins

By Spencer S. Hsu
Washington Post Staff Writer

Encased in a plain white fence and obscured by stacks of utility pipes, the U.S. Capitol's gleaming East Front is vanishing behind one of the most unusual and important construction projects in the world-famous structure's 202-year history.

Work has begun on the $368 million Capitol Visitor Center—a five-acre underground complex soon to become the most visible example of how the Sept. 11 attacks are physically changing Washington.

Funded as part of a $40 billion emergency package that sped through Congress to

B2 Tuesday, May 28, 2002

The view from the third floor of the Capitol toward the Supreme Court building shows the plaza turning into a six-acre construction site.

Security Comes First In Accommodating Tourists, Congress

Sticking to the Plan

CVC Officials Use Original Olmsted Landscaping Blueprint

By Jennifer Yachnin

The poplar trees that once graced the Capitol's First Street entrance have been removed, the expanses of lawn have been transformed into temporary homes for construction trailers and the asphalt plaza is punctured with numerous holes.

As construction of the Capitol Visitor Center gets under way on the East Front, it is hard to imagine the vision laid forth nearly 130 years ago by Frederick Law Olmsted, the Capitol's first landscape architect.

But when construction wraps up — the subterranean building is slated for completion in 2005 — officials in the Architect of the Capitol's office say the eastern end of the Capitol campus will reflect the single-page design introduced by Olmsted in 1874.

'Adaptive Reuse'

On a late August day overlooking the construction site from the East Front steps, CVC project spokesman Tom Fontana holds two large posters: One is a grainy enlargement of the original Olmsted plan, the other a multicolored drawing of a CVC-inclusive landscape.

"While we're not recreating the landscape he envisioned, we are revi

said.

It was the Olmsted plan
the expansion of the Cap
late 1800s, that created t
of the 50-acre parcel: cu
tains, benches and large,

While the newest land
maintain Olmsted's majo
as the two large egg-sha
tree-lined First Street entr

CRANES TODAY

The independent magazine of the crane industry

November 2003

USA

Capitol construction

The New York Times ON THE WEB

THE NEW YORK TIMES NATIONAL TUESDAY, MAY 28, 2002

Capitol Visitor Center is already under way, and not without inconvenience and a change in ambience.

o Transform East Front of the Capitol

would be considered extravagant.

Within months, $100 million was appropriated for the center. The Sept. 11 attacks brought further financing for the complex, whose project architect is RTKL Associates.

Officials hope to have the plaza above the center enclosed in time for the presidential inauguration festivities in 2005 and to have the

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Roll Call

Capitol's Big Dig Begins

Capitol Visitor Center got under way in earnest during the August recess. With the East Plaza now completely sealed off, trucks are free to move unin-
traffic. The East Front center steps from ground level to the first landing were put in storage at the end of July to make way for the installation of the
l. Temporary ramps for emergency egress were installed in their stead. When the estimated $350 million project is completed in 2005, visitors will enter
a centralized screening facility. The CVC will also have much-needed amenities, including a food court, additional restrooms and a learning center.

Reyes Martinez puts up caution tape around a contaminated area.

Photos by Tom Williams

The only magazine for the building team

BUILDING DESIGN & CONSTRUCTION

NEWS & TRENDS

Congress takes c

CVC project footprint

Contruction site perimeter

This aerial view of the East Front of the U.S. Capitol shows the magnitude of the new underground visitor cen
white. The dotted yellow line frames the area designated for all construction operations. Photo: Office of the A

Fast-track construction has kicked into higher gear this summer on the U.S. Capitol's largest-ever expansion, a project for visitors, but ironically designed to be out of their sight.

Spurred on by post-Sept. 11 security concerns, the Architect of the Capitol Alan Hantman has jump-started an ambitious program that, when all is said and done, could translate into nearly $400 million in new construction additions. Chief among them is the new, $265 million, underground Capitol Visitor Center (CVC), which will dip 50 feet below ground adjacent to the East Front Entrance. Alone, the center represents the most extensive Capitol improvement since the House and Senate wings were added more than 140 years ago.

Anxious to address security concerns, the Capitol has accelerated its largest addition in 140 years

In gestation for nearly a decade, the three-level CVC project will draw on the original design of RTKL Associates, Baltimore. According to its design, the new CVC will add more than 580,000 sq. ft. of space to the Capitol's existing 770,000 sq. ft. In fact, the CVC's 193,000-sq.-ft. footprint will even be larger than the Capitol's 175,000-sq.-ft. footprint.

Last month, Hantman let a $99.9 million contract to Dallas-based Centex Construction Co., for the first phase of the center, scheduled for completion in early 2004. The contractor was one of four bidders to pursue the job.

Historic first for CM role on Hill

The Architect of the Capitol is using an outside construction manager for the first time. Hantman picked Gilbane Building Co., Providence, R.I., to fill the crucial CM role, under an initial $7 mil-

lion contract sig
then, Gilbane al
additional $9 mil
utility relocation

The Boston
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RTKL's team. An
project manager
RTKL vice presi
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14 Building Design & Construction . 07 · 02 . www.bdcmag.com

THE CONSTRUCTION WEEKLY

ENR Engineering News-Record

THE TOP 100
- DESIGN-BUILDERS
- CONSTRUCTION MANAGERS

enr.com

A Publication of The McGraw-Hill Companies

June 17, 2002

STEPPING UP

U.S. Capitol tests construction management on new Visitor Center

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CBS Evening News
CNN, Fox News
ABC News

Contract Differences

CVC:

- Design-Bid-Build
- Award Fee
- Fixed Fee

PenRen/C:

- Design-Build
- Performance based
- Award Fee
- Incentive provision

Contract/Acquisition Options

DESIGN - BID - BUILD = CONFLICTING GOALS

In the traditional design-bid-build delivery method, the Government pays for the development of a design by one party, accepts the design, and then contracts for the construction of the design with another party. The Government is essentially placed in the middle in the event of discrepancies between the design and the constructability of it, and the focus of the contract becomes how to construct the design. This produces an environment of cross-purposes and conflicting goals, and can result in claims and litigation.

DESIGN - BUILD

Under design-build arrangements, the Government contracts with one entity for the design and construction; one contractor becomes responsible for ensuring the Government's requirements are satisfied.

Contract/Acquisition Options

BEST VALUE

The contractor is not selected based on the lowest bid. Rather, quality, past performance, and technical and management approaches, are the most important factors in determining which firm receives the contract.

INCENTIVES / AWARD FEES

A contract with a sophisticated incentive arrangement can emphasize customer satisfaction and quality of performance and penalize contractor behavior that seeks to maximize profit at the expense of performance. These incentives place the entire contract reward structure in the hands of the Government. The contractor can only realize profits if the government determines it has earned them. This acquisition approach truly produces a “win

Contract/Acquisition Options

PERFORMANCE - BASED REQUIREMENTS

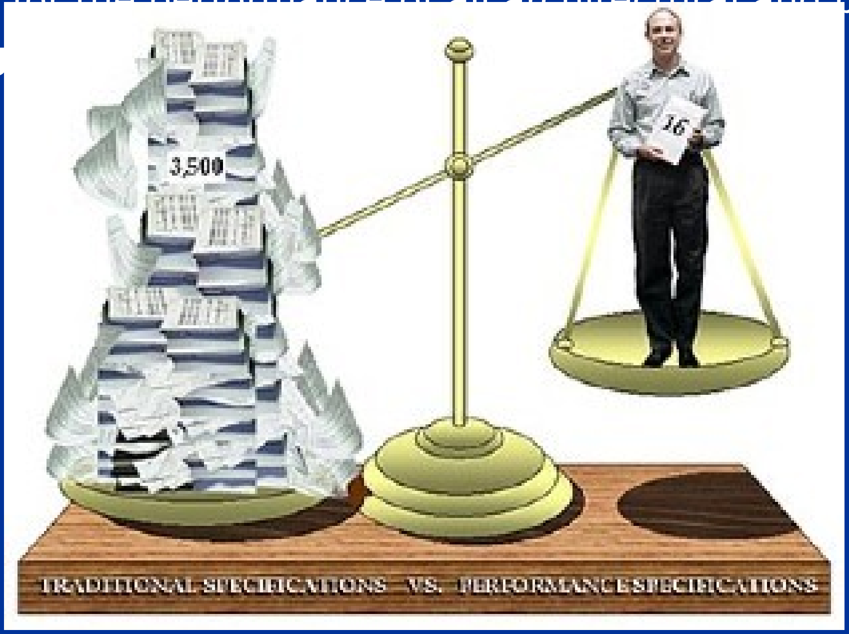
This type of requirements statement is especially well-suited to the design-build delivery method. The contract focus is on what needs to be done, and the contractor, using the innovative forces at play in the market, determines how to do it. The incentive structure in the contract ensures that these solutions will be derived with customer satisfaction in mind.

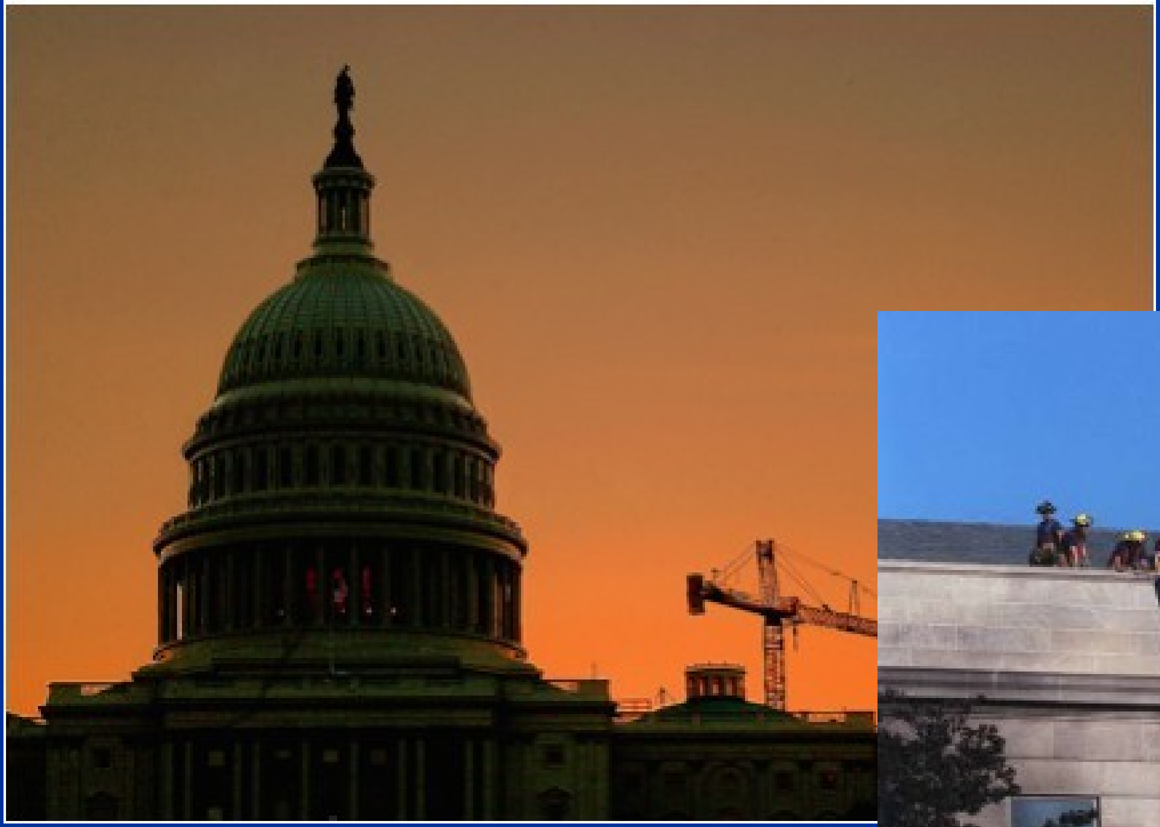
Contract/Acquisition Options

16 - PAGE PERFORMANCE REQUIREMENTS

The PenRen/C acquisition achieves the final step in the evolution toward true performance-based requirements. In Wedges 2-5 all of the technical requirements for the performance of all architectural and building systems are included in just 16 pages in the solicitation. These 16 pages represent the results we expect from the renovated space. What’s been cut out is the “how-to instructions” that limit the contractor’s creativity and innovation in achieving those results.

To fully gauge how significant a step this is, one need only consider that in 1997 the technical requirements for the construction of Wedge 1, representing only 25% of the square footage of the Pentagon, were over 3,500 pages of the solicitation. For Wedges 2 through 5, the largest single acquisition the Renovation Program will undertake, all of the technical requirements for the performance of all architectural and building systems are included in just **16 pag**


3,500
16
TRADITIONAL SPECIFICATIONS VS. PERFORMANCE SPECIFICATIONS



Let us not forget what we are about…

For questions or further information on contracts:

Joseph Sacco, AIA,
3D/International

Saccojoe@army.pentagon.mil

703-692-6626